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Address.

THE VALUE OF THE PHYSICIAN AND OF THE NURSE IN SOCIAL SERVICE WORK IN TUBERCULOSIS; THE RESPONSIBILITY OF EACH TO THE STATE AND TO THE PATIENT.*

By JOHN B. HAWES, 2d, M.D., BOSTON.

Secretary of the Trustees of Hospitals for Consumption; Director Tuberculosis Clinic, Massachusetts General Hospital.

Two very distinct subjects have been given me to discuss, and there is much that might be said concerning each of them.

I may well introduce what I have to say concerning the responsibility of the nurse and of the physician to the state and to the patient with these statements, in each of which I am a sincere believer:

1. Every tuberculous patient, as far as it is possible, should, at some time, have sanatorium treatment, but:

2. The patient's sojourn in a sanatorium should be looked upon as an incident of great, or less, importance in a course of treatment, the most important parts of which come before his

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entrance and after his departure from the sanatorium.

3. The responsibility of physician and nurse does not end when the patient is admitted to a sanatorium or hospital.

At present the tuberculosis sanatorium or hospital is one of the most important, and certainly the most striking, factor in our campaign against consumption; as time goes on, however, I believe that the part played by institutions will be a smaller and smaller one, while that of physician and nurse, in private or public capacity, will become of increasing importance. We have reached the point, in Massachusetts at least, when we realize that the patient's stay in a sanatorium is only a means to an end and that the period before he enters the sanatorium, and after he is discharged, is equal in importance, as far as his own welfare is concerned, to that spent in the institution itself.

The physician, and particularly the nurse, may be of inestimable service in covering these two periods, before and after the patient undergoes institutional treatment. The responsibility of the medical profession goes further than merely making the diagnosis of tuberculosis and getting the patient into a sanatorium. We are far too apt to feel that our duty is done, and well done,

as soon as we get our patients into Rutland, for instance. We do not always realize that we have a responsibility toward the patient's family, toward the public at large, and that our responsibility toward the patient continues after he leaves the institution.

In an idealized plan for controlling tuberculosis, the following factors should play important parts:

1. The elimination of sources of infection, both human and bovine.
2. The education of the public, and particularly of children, in methods of right living and proper hygiene.
3. The early diagnosis of clinical tuberculous disease in adults and children.
4. Sanatorium treatment for the education and care of favorable and suitable cases.
5. Hospital treatment for the care and isolation of advanced, progressive cases.
6. Supervision of the tuberculous patient before and after leaving an institution, and at all times if the patient does not, or cannot, have institutional care.

I shall take up these various points briefly and will try to point out in as practical a way as I can where the nurse, and through her, social service,—or as I prefer to call it, “applied common sense,”—can do the most good, and, where the physician's responsibility lies.

THE ELIMINATION OF SOURCES OF INFECTION, BOTH HUMAN AND BOVINE.

As far as bovine sources of infection are concerned, this is largely a state or administrative problem. In all cases where there is any question as to the cleanliness of the milk supply the physician might well advise pasteurizing the milk, and the nurse can give instructions as to how best to do this.

The elimination of human sources is a far more difficult task. Could we bring this about, our tuberculosis problem would be easily and quickly solved. This, likewise, is largely a state and administrative problem, yet the nurse and the physician have a very definite responsibility in doing their share to eliminate such sources. Although theoretically, we all believe that it should be done, I wonder how many of us physicians insist emphatically that when we make a diagnosis of tuberculosis in one member of the family that every other member

of the family should be carefully examined. I feel very sure that this procedure is not carried out anywhere near as often as it should be. Among the poorer classes, particularly in school work, the nurse can arrange this more easily than the doctor. As often happens in medicine, the poor classes and the rich classes get the best treatment. It is the patients who come to our own offices, who are unwilling to go to a big public clinic, and who pay us a moderate fee, who often get the poorest treatment. Personally, I find it very hard to ask a man with active tuberculosis, who has come to me for advice, and who has cheerfully paid my bill, although I know that he is in very moderate circumstances, to bring in his wife and children for examination, at what he knows will be an additional expense; and yet I feel that it would be a good investment on his part.

How many elderly persons are there with so-called “New England winter coughs” who have coughed and raised profusely for many years and yet maintained very good health in spite of it, who, on close examination, will be found to have chronic phthisis, and who thus explain the cases of consumption among the younger members of the family? In my own practice, I can name a good many instances where tragedies of this sort have occurred because of neglect on the part of the physician to inquire into such sources of infection. Are we sufficiently strict about not allowing a consumptive father or mother to live at home without the training that a stay, even a short stay, in a properly run sanatorium gives? Personally, I do not think that we are. It has often been said that the intelligent consumptive is no more a source of danger to those about him than a man with a wooden leg. I do not feel so sure of this as I used to, and the more I see of tuberculosis work, the more firmly I believe that every consumptive, whenever possible, should undergo sanatorium treatment, if only for a short period. Dr. Joseph H. Pratt and Dr. Nathaniel K. Wood, of Boston, have both done excellent work in showing us what home treatment really means. Indeed, I have been most intimately connected with this work myself, and before our present sanatorium system was developed in Massachusetts have urged this method of treatment in almost every city in the state. In my experience in the State House during the past ten years, where we deal with the tuberculosis problem as a whole, and not with individual patients, I do

not now feel that home treatment ever can, or should, take the place of sanatorium treatment among the poorer classes if the sanatorium is in any way available.

So, here, in the elimination of human sources of infection, the nurse and the physician have a very definite responsibility and can accomplish much good.

THE EDUCATION OF THE PUBLIC AND PARTICULARLY
OF CHILDREN IN METHODS OF RIGHT LIVING
AND PROPER HYGIENE.

Seven or eight years ago I was instrumental in having passed through the legislature an act (Chap. 181, Acts of 1908) which demanded that tuberculosis, its cause and prevention, be taught in the grades of our public schools in which the subjects of hygiene and physiology are taught. I also helped to construct some school tuberculosis exhibits to show in a striking and graphic way the general subject of right living as applied, not only to tuberculosis, but to health and disease in general. I well remember the words of an eminent physician who was much opposed to such legislation as this and who felt that children should not know anything about such subjects. I could not agree with him then nor can I now. I believe that there is no more important subject taught in our schools than the elementary principles of hygiene. I should like to see the three R's, reading, writing, and arithmetic, sacrificed in order to hammer into the heads of our school children the question of the proper care of their bodies and good habits in regard to the care of the teeth, bathing, eating, sleeping, exercise, fresh air, etc.

Again, among the poorer classes, at least, such work as this does not so much involve the private practitioner and the nurse. Nevertheless, the physician has a very definite responsibility in instructing the parents of the children with whom he comes into contact and the children themselves concerning such matters, whereas the opportunity for the nurse to do good in this direction is almost unlimited.

THE EARLY DIAGNOSIS OF CLINICAL TUBERCULOUS
DISEASES IN ADULTS AND CHILDREN.

This is a subject in which sanity and common sense is very much needed in Massachusetts.

One must make a distinction between tuberculous infection, which most of us have, and tu-

berculous disease which most of us have not. It is not the nurse's duty to make the diagnosis of consumption, but it is her duty to be able to recognize the danger signals and to teach mothers, fathers, and children concerning them, and to bring them to the attention of the family or the school physician. We physicians must constantly bear in mind the responsibility we are assuming when we state that any given patient has or has not pulmonary tuberculosis. We must remember the value of constitutional signs and symptoms, fever, loss of weight and strength, etc., as compared with localized signs in the lungs. We must realize that absence of proof is not proof of absence, and that because we cannot find striking abnormalities in the lungs it does not follow that the patient who has lost weight and strength and who is running a slight fever is free from active tuberculous disease.

In my own work I am coming in contact with two extremes in the diagnosis of tuberculosis. The younger men in our large cities are, apparently, eager to find evidence of tuberculosis and are occasionally finding such where none exists. At the Massachusetts General Hospital I am constantly unmaking diagnoses of consumption and trying, not always successfully, to undo the harm which has been done by over-enthusiasm in this regard. On the other hand, in the country districts at a distance from the large medical centres, there are still far, far too many physicians who do not know how to recognize incipient pulmonary tuberculosis and who are carrying the patient along under such vague and misleading terms as weak lungs, a spot on the lungs, chronic bronchitis, anemia, debility, and others. I believe that the diagnostic standards drawn up for the use of the Framingham Experiment will be of great value, and merit earnest study, on the part of every physician.

SANATORIUM TREATMENT FOR THE EDUCATION AND
CARE OF FAVORABLE AND SUITABLE CASES.

The physicians of Massachusetts are not responsible for the management of our state sanatoria. That responsibility rests on a board of trustees and the Commonwealth of Massachusetts, but the responsibility of making effective the treatment which our sanatoria are offering and of making the investment that the State of Massachusetts is putting into these institutions

a good investment does rest very largely with the medical profession of Massachusetts. I do not believe that we sufficiently realize this responsibility. I do not believe that the average physician knows as much as he ought to know concerning the place to which he is sending his patients. I doubt if he reads at all carefully the detailed circulars of information which are sent out to every physician in the state from time to time, and I am sure that the percentage of physicians who have ever visited a tuberculosis sanatorium of any kind whatsoever is an extremely small one. At the largest medical school in Massachusetts young men are graduated every year and given the degree of Doctor of Medicine with practically no knowledge of what our tuberculosis problem is and what Massachusetts offers in the way of sanatorium treatment.

I believe that we, as physicians, ought to have a very definite knowledge concerning such matters, and that before we advise any of our patients to go to a state sanatorium or, as not infrequently happens, advise them *not* to go to a state sanatorium, that we should know in considerable detail where the patient is going, what he will receive in the way of treatment, what he can expect in the way of improvement, and what such improvement depends upon. Far too many patients are entering our state institutions with an attitude partly, at least, instilled by their physicians, "Here I am. Now feed me and cure me." Many of the difficulties that our superintendents meet in persuading our patients to take proper treatment would be done away with were every patient given a frank, plain, common sense, and, if necessary, severe talk, to show him that the successful outcome of his case depended far more upon the amount and quality of his brains than upon the amount of diseased tissue in his lungs. There is a tremendous opportunity for physicians and nurses to do good in this direction.

At the State House, at the Massachusetts General Hospital, and in my own private work, I am constantly meeting patients who have come back from a sanatorium with apparently little or no idea as to why they really went there, and what they should have learned. This is not altogether the fault of our sanatoria. I fully realize that at Rutland, for instance, four physicians, one of whom is engaged almost entirely in administrative work, cannot go into much detail with 350 patients, and that until there are either more physicians

or fewer patients, the state of affairs will not be altogether satisfactory. But we physicians who send our patients to Rutland, to North Reading, and elsewhere, can be of great service in helping to make this problem a less difficult one by giving our patients some common sense ideas as to what they must do to get well, and by reminding them that their getting well depends largely on themselves.

HOSPITAL TREATMENT FOR THE CARE AND ISOLATION OF ADVANCED, PROGRESSIVE CASES.

It is not a pleasant task to advise any patient to go to a tuberculosis hospital when we know, and the patient knows, that in all probability the outcome of his case is going to be anything but a favorable one. I do not see how a hospital for advanced, progressive, and dying cases of consumption can be anything but more or less unpopular, and yet such hospitals play a most important part in our tuberculosis scheme. The medical profession and the nursing profession should do more than they are now doing to make these institutions effective, to get into them the patients who should go there, and to see that they are made as attractive as it is possible to make them. If there is anything really at fault with such a hospital, so that it deserves its unpopularity, pitiless publicity should be exercised until the fault is remedied by those in a position to remedy it. I do not think for a minute that we are going to accomplish much-needed changes in many of our local tuberculosis hospitals by simply refusing to send our patients there, by advising them not to go, by saying that they are nothing but death houses or morgues, or by using similar language the echoes of which constantly reach me at the office of our trustees at the State House. The waiting list for our state sanatoria is a distressingly long one. A patient must wait at least two months, and at present a longer time, before he can possibly be admitted to any one of them, while at Westfield there is nearly a six months' interval between the filing of the patient's application and his final admission. Yet there are many physicians, and, I am afraid, nurses also, who are advising their patients not to go to this or that local tuberculosis hospital where they can get under cover and wait comfortably until they can enter a state sanatorium.

I, personally, am acting under the strictest injunctions from the board of which I am secre-

tary, not to admit far advanced, progressive, and unfavorable cases to our sanatoria. I am constantly meeting such patients, however, who positively refuse to occupy a bed available for them in some local tuberculosis hospital and who are led to believe by their physicians that they can eventually gain admittance to a state sanatorium. It is not a pleasant task to have to tell such patients the truth.

SUPERVISION OF THE TUBERCULOUS PATIENT BEFORE AND AFTER LEAVING AN INSTITUTION, AND AT ALL TIMES IF THE PATIENT DOES NOT OR CANNOT HAVE INSTITUTIONAL CARE.

Energy and common sense in this direction, will do untold good. The work that our after-care nurse, Miss Bernice Billings, has done during the past five or six years shows what one woman can do. The plan of the State Department of Health to provide a number of nurses whose duty it is to be to look after discharged sanatorium patients and all other patients who do not go to an institution, with Miss Billings at the head of such a corps of nurses, will, I firmly believe, do more to decrease our tuberculosis death rate, and to make our anti-tuberculous efforts effective, than any one thing the State of Massachusetts has done for years. But every physician, and every nurse, should bear in mind that unless Miss Billings, and the corps of nurses under her supervision, have the earnest and hearty coöperation of the medical and nursing profession, their efforts will be more or less unavailing. With at least 10,000 consumptives in Massachusetts who are in need of active and aggressive treatment,—and this I believe to be a conservative estimate,—it is evident that no one woman, directing the work of a dozen or so nurses, can do very much; but if a plan can be brought into operation whereby Miss Billings and each one of her nurses are in active and close coöperation with nurses, physicians, dispensaries, tuberculosis associations, boards of health, and private physicians throughout the state, then we will accomplish something.

I hope, before long, to see the proper machinery in operation whereby, whenever the diagnosis of pulmonary tuberculosis is made in the case of any man, woman, or child in this state, certain things will be done, including the examination of the other members of the family, proper supervision of the patient himself until

he can go to a sanatorium or hospital, adequate care of the other members of the family, if the bread-winner is removed, and finally, steps taken so that when the patient leaves the sanatorium or hospital he will return to proper home conditions, to work suited to his needs, and that at all times he will be under proper supervision, whether he likes it or not. This happy state of affairs will result only if we, as physicians or nurses in our private capacity, will realize the need of it, and will do our share to help, and realize and assume our responsibilities to the state and to the patient, some of which I have here outlined.

Original Articles.

SPONTANEOUS PNEUMOTHORAX.*

By PHILIP H. PIERSON, M.D., SAN FRANCISCO.

THIS term, "spontaneous pneumothorax," has been used in the literature to refer to cases of natural pneumothorax in persons with no demonstrable lung disease and, consequently, in apparently good health. It is also called by some, "idiopathic pneumothorax," "latent pneumothorax," "pneumothorax with insidious onset," "pneumothorax silencieux," as well as other terms indicating a non-tuberculous etiology.

Up to 1902, Russell and Riessman had been able to collect only 56 cases from the literature, and in 1912 Nickolsky reported 90 cases, which included the 56 above mentioned. From this it can be seen that the condition is not a common one, although it may be more often present than recognized. In healthy individuals its onset may be so insidious and the signs, where there is only a partial collapse, so vague that without urgent symptoms the condition may be easily overlooked in hurried examinations of the chest. Among others more recently, Hewlett and Hamman have each reported four cases and Perry one. The cases, as well as their outcome, are so similar that certain points as to etiology, symptomatology and prognosis can be considered collectively.

Zahn, in 1891, published the first thorough study of the causes for pleural rupture where there was no inflammatory process discernible, and describes four different modes:

(1) The rupture of vesicular blebs. These may be as large as hens' eggs, and are found in pulmonary emphysema. Because of the occurrence of pneumothorax in the comparatively young, where emphysema does not usually exist, we must conclude that it does exist in small portions of some apparently healthy lungs without giving any symptoms;

* Read before San Francisco County Medical Society, September 4, 1917.

(2) The rupture of interstitial emphysema blebs, in which the air enters the interstitial tissue and then reaches the pleural surface, where vesicles form and rupture. All such instances have been about pleural adhesions, which are probably the cause of such a condition;

(3) Direct tear of pleura by the tug on adhesions; and

(4) Senile atrophy of pleura. This is so uncommon that it may be disregarded, and (1) and (2) may be combined under the term of vesicular emphysematous blebs.

The tearing of a pleural adhesion is the most probable cause for the rupture and, if we consider this pleural involvement possibly the primary focus of a tuberculous process in the lung, as Gohn would have us believe, where there is no other discernible evidence of tuberculosis, then more of these cases really may be due to tuberculosis than is believed. If the original tuberculous infection was in the pleura, and became entirely healed at that point without draining into and involving the bronchial glands, the physical signs would be so small that they could not be detected, and the area might be so minute that it would not appear in the x-ray. In tuberculosis, where the condition of pneumothorax occurs in about 1% of the cases, the rupture can be explained by a diseased condition near the periphery of the lung, where possibly there are adhesions and, when just the right amount of pressure is put upon this area, there is a rupture.

Next, may we consider the events generally just preceding the pneumothorax in apparently healthy individuals? It more often occurs after strenuous exertion, such as a hard day's work, or occasionally after a sneeze, hard cough, or sudden deep inspiration, which might follow the shock of a cold shower bath. Several of the cases in the literature have occurred during sleep. In one of the cases, which I will speak of later, that of a new-born babe, the pneumothorax was produced by the initial cry; in another, a boy of four years, it had a very gradual onset before admission to the hospital. In a patient with pneumoconiosis it followed a hard day's work.

When the lung suddenly collapses there is naturally always dyspnea, which becomes marked on exertion. There is somewhat more rapid pulse, and varying degrees of shock in the severe cases. If the patient is put to bed and given absolute rest, most of these symptoms subside in one, three or four days. On physical examination, the affected side is generally slightly enlarged, due to the increased intrathoracic pressure. If the collapse is only partial, this may not be evident. As is frequently the case, the collapse is not complete, and it occurs gradually. This can be explained by the fact that the tear is only a small one and, as the lung decreases in size, the aperture closes of itself. It is not uncommon to find a dulness, spoken of

as "wooden," over the affected side, although tympany would be expected. This dulness is probably due to the compression of the air in the pleural cavity. There is always diminished breathing over a part or the whole of this chest, with some exaggeration on the opposite side. The heart may or may not be displaced; it most often is, especially where there is any considerable amount of air. It is not always possible to hear a coin sound, or the so-called metallic tinkles, which are caused by bubbles of air in the compressed pocket of air (pneumothorax). There is generally hyper-resonance, or dulness, to a lower level on the affected side, and it does not move with respiration. The history of sudden dyspnea, or its gradual onset within a few hours, in an apparently healthy person, who shows either a wooden tympany or hyper-resonance over one chest, with diminished or absent breath sounds, should be sufficient to make the diagnosis of pneumothorax. From the physical signs fluid might be suspected, but the symptoms are not those of fluid.

The treatment for this condition is absolute rest, and this is generally sufficient. If the symptoms are severe, aspiration may be tried, but not until after a day or two, when the rent in the visceral pleura shall have healed. In most of these cases the air is fairly rapidly absorbed, and they are apparently in good health in four to eight weeks. The ultimate prognosis is also good; practically 100% of the 90 cases recovered, although a few had recurrence of the pneumothorax, and at least one had it on the opposite side. It is also very rare for fluid to form in these cases. I see no reason why such a patient may not have a recurrence of the pneumothorax, because adhesions will again be formed at the site of the tear. This should cause a guarded prognosis and advice as to avoiding severe and sudden exertion.

Just a word as to the tuberculous cases: It frequently occurs without any severe exertion; it often is not complete because of adhesions, and it is generally fatal, due possibly to some disease on the other side or to their depleted physical condition, or because the tear is larger and fails to heal quickly and the lung to re-expand. In those cases which live, fluid practically always accumulates.

Let me conclude by presenting three short histories with their x-ray pictures, and then by demonstrating a case of natural pneumothorax in a man with tuberculosis.

CASE 1. A. B., 41 years old; miner; patient of Dr. Boardman. Complaint, shortness of breath—20 days.

Family History.—Negative.

Previous History.—Never sick; no frequent colds.

Occupation.—Dry-drilling in a gold mine for eleven years, with the exception of 1½ years.

Present Illness.—For past few months patient has had some cough and expectoration, which has been dark and filled with dust. About two months

ago noticed some shortness of breath on exertion. This persisted, but did not interfere with work until twenty days ago, when, at quitting time, after a full day's work, felt weak and so short of breath that he could not walk fifteen feet without rest. This marked shortness of breath lasted only two or three days, accompanied by cough and expectoration. He had no fever, and otherwise was well. After three days he could walk about and dyspnea gradually decreased. At present he has a slight cough and expectoration. He has lost ten pounds in weight, appetite and sleep good; no fever, sweat, or bloody expectoration. Physical examination shows the left side more prominent than the right; motion equal on both sides; hyper-resonance over the left anteriorly and tympanic posteriorly down to the spine of the scapula. The right side is slightly dull; the heart is displaced to the right. Modified bronchial breathing with a few dry musical râles on the right. On the left the sounds are distant. Whispered fremitus absent over the left upper lobe. At the left base the breathing is bronchovesicular, no coin sound heard. X-ray diagnosis: pneumothorax on left, with pneumoconiosis.

CASE 2. T. K., aged 4; patient of Dr. Ash. Entered hospital December 4, 1916.

Previous History.—Negative; chicken-pox. Development normal.

Present Illness.—Ten days ago child became irritable; had fever in the afternoon, and the local doctor said he had bronchitis. Vomited for the first three days; two days ago had profuse sweats. Examination showed hyper-resonance in the left axilla, with râles at both bases and large interscapular dullness. Two days later there was hyper-resonance over the left chest; breath sounds distant; dullness suggesting displacement of the heart to the right. Four days later the hyper-resonance had almost disappeared; there were still râles pretty much throughout the left side. On following day the râles were still heard at the left base and the right apex; temperature to about 99.6 every afternoon. X-ray showed pneumothorax left.

CASE OF NATURAL PNEUMOTHORAX IN TUBERCULAR CASE, WITH RECOVERY.

CASE 3.—M., a new-born child on the service of Dr. William Lucas, University of California Hospital.

This was the first child of an apparently healthy mother. At birth it was noticed that the child was cyanotic and uttered a very feeble cry. The breath sounds were harsh and high pitched on the left, and very much diminished on the right side of the chest. The next day its color was ashen gray; respirations increased, but the child was not markedly dyspneic. From this time on, it gradually improved, so that on the fourteenth day it was apparently well and was discharged. The x-ray pictures shown below were taken on the third, seventh, and fourteenth days. In Fig. 1 the heart is seen displaced to the left; the mediastinum is also displaced to the left; the left lung is somewhat compressed by the pressure of the heart, and the right pleural cavity does not contain inflated lung. If this represented a case of failure of the right lung to expand, we would expect the heart and mediastinum to be pushed to the right by the greater pressure on the

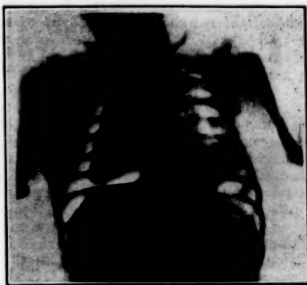


FIG. 1.—X-ray taken on third day, showing collapsed right lung and displacement of mediastinum to left.

left and the vacuum in the right pleural cavity. From this it seems very clear that there must have been a rupture of the right lung, and that its pleural space was filled with air under pressure. From the gradual expansion of the lung, as shown in Figs. 2 and 3, this theory is substantiated.

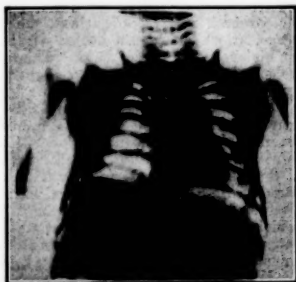


FIG. 2.—Seventh day. Right lung almost expanded. Mediastinum still slightly to left.

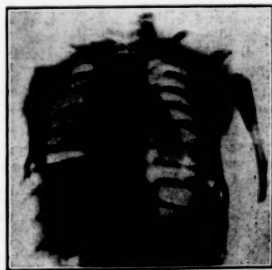


FIG. 3.—Fourteenth day. Mediastinum in normal position. Lungs normal.

CASE 4.—V. M., 38; cook.

Family History.—One sister died of tuberculosis.

Previous History.—Negative except for frequent colds. Best weight, 157, three years ago; average, 135.

Present Illness.—Twelve years ago fatigue, loss of weight, slight cough and fever; put to bed and soon felt all right. Three years and seven months ago sudden onset of chill, fever, pain in the side, a "drunk feeling" and sweats at night. He kept working, although one doctor said there was a suspicion of tuberculosis. Three weeks later his sputum was positive. After two months of good treatment, cough almost disappeared and he gained 27 pounds in weight. His first x-ray was taken then, and showed involvement of left apex. Nine months later the same symptoms recurred, and in two months something inside his chest "broke" and he spit up considerable pus, which gave much relief. Then he had apparently perfect health. Thirty months ago recurrence of pain in the chest, cough, spasmodic hoarseness and asthma. Because of the physical signs, he was advised by one doctor to have an artificial pneumothorax. About one month later he suddenly had a "big cough, terrible pain in the chest, things seemed to turn upside down." He coughed up a wine-glass of pus and two glasses of pus a day for two weeks. This had a terrific odor, and was accompanied by high fever. At this time he noticed his heart was on the right side. Rather soon began to feel much better, but six weeks later had another severe attack of shortness of breath. As he recovered he felt water splashing around in his left chest, until eight months ago, at which time, a doctor who saw him said that his chest was full of fluid. When he came to me he complained of weakness on slight exertion, inability to bend over, a cough when he lay down. Physical examination showed the left side full of fluid, heart displaced to the right axilla, and a few transient rales in his right upper lobe. The fluid has gradually been withdrawn, which, with reaccumulated fluid, has amounted to over 11,000 cc. I have introduced air in this left pleural cavity until there is now practically no movement of this lung, which did begin to expand at the end of thoracentesis, two months ago, making the total time for which this lung was collapsed, eighteen months. His blood Wassermann was negative; his blood tubercular test was one plus, chest fluid tubercular test four plus. Chest fluid at first showed specific gravity of 1019, a few pus cells, no tubercular bacilli. About three months ago tubercular bacilli were found in his chest fluid, as well as in his sputum. The last fluid withdrawn was much more turbid, and of specific gravity 1021. He has had no fever.

DISCUSSION.

DR. H. D'ARCY POWER: These cases are very interesting to me. I had no idea that the non-tubercular form was such a rarity. It happened to be my luck some few years ago to have a case which I think must be placed in this group. I have good reason to remember it, because it was a week after the fire, and there was no available aspirating apparatus. Everything had been burned up. The patient, a man about forty years of age, a farmer, was sent in from the Sierras, with the story that he had caught a cold and quite suddenly felt pain in his chest, with cough. The local practitioner could not make anything definite out of it, and sent him to me. I made an examination of the chest, and found very much the condition described here tonight—a localized pneumothorax. He had an area of absent respiratory sounds on

the right, and tympany, and quite distinct splashing. He was not coughing at the time, had no fever, and, except for a little pain, was practically symptomless. I borrowed a spinal injection needle from Dr. Evans, and with the aid of a Davidson syringe, a piece of glass tube and a bottle, made a very good aspiration apparatus. I got out quite a little air, under pressure at first, and then, I suppose, thirty or forty cc. of clear fluid. He made an uneventful recovery, and while I was unable to follow the case up, I heard from him five years afterward as without any tuberculosis or other symptoms.

I do not know what caused it. It has always been a puzzle to me, and that is the reason I mention it. I think probably if these cases were more carefully looked for, we should meet them oftener than we do. Among cases of, not spontaneous, but accidental pneumothorax, we probably have more than are generally reported. Some years ago, in Grass Valley, I was called in consultation to a child with double bronchial pneumonia. The doctor in charge got the idea that the child had fluid, and stuck in a large exploratory needle. Aid went in and the child went out. I have no doubt these things occur more often than we know. They are not likely to be reported.

DR. RACHEL ASH: I have seen two of the patients described by Dr. Pierson this evening. The case of the boy of four years was not as simple as it would appear. The child was exceedingly irritable, had severe spasms, Babinski, and various other phenomena pointing to an involvement of the central nervous system. He entered the Children's Hospital with the history of a recent bronchitis. On examination, posteriorly there was a tympanic area, and below this a definite dullness, which I took to be fluid. I inserted an intramuscular needle very carefully, and was surprised to see the piston forced back immediately, by what was evidently a gas under pressure. The next day, pneumothorax was confirmed by the x-ray. I felt that possibly there might have been some adhesions between the parietal and visceral pleura, and that I had punctured the lung. I was much relieved to find that the pneumothorax had no apparent etiology, and that Dr. Bryan had found in the roentgenogram secondary tuberculosis and bronchial adenitis. I was never able to find the cause of the various nervous phenomena. We know nothing of the later history of the child, but he was in good health and running about before he left the hospital.

The other child was born at the U. C. Hospital. Our attention was first called to the patient by the severe cyanosis. One side of the chest was practically immobile; the x-ray made the diagnosis absolute. This child's chest also cleared up. The question there, of course, was whether there was a true congenital atelectasis, the lung having never expanded, or whether there was a rupture of the lung with the first cry. Unfortunately, no pleural puncture was made, to establish the presence or absence of air. There was apparently no pleural effusion in either case.

MAJOR E. S. KILGORE: Dr. Pierson's last case illustrated well the enormous capacity of the lung to expand after being contracted very much for a long time. This was impressed upon me very forcibly some years ago in connection with a

somewhat similar case. A young man, about twenty-four, complained of shortness of breath, amounting to disability. This was the only symptom he had had for about a year. From the history we felt sure his pneumothorax, which was a right-sided one, had existed about a year. X-ray showed the lung contracted to about the size of one's fist. The intrathoracic pressure was measured, and instead of positive pressure, which is the rule in early cases, he had negative pressure; so that, presumably, air had been absorbed as much as possible, and the condition was stationary. Attempt to withdraw any considerable amount of air failed. A surgical consultant, who was particularly interested in chest surgery, felt that several of the patient's ribs ought to come off in order to strip off the fibrous tissue and allow the lung to expand. The internists, however, decided to try more aspiration, in small amounts, and small amounts of air were taken out every other day for a considerable period of time. In the course of a few weeks, the lung completely expanded, x-ray showed a normal chest, and instead of being short of breath, he could run around the block as comfortably as a normal man, and a year later was in the same condition.

In regard to accidental pneumothorax resulting from chest puncture, the more dangerous cases are those without pleural adhesions. Fatalities have been reported following in a few hours after a needle has been stuck into a fairly normal lung. As there are no adhesions, the lung can contract easily and completely, and the sudden throwing out of so much lung space results in fatality. Pleural adhesions very much increase the chances of puncturing the lung, but, fortunately, they also prevent serious pneumothorax when such puncture occurs. Radiograms taken after ordinary chest punctures show minor degrees of pneumothorax oftener than we are in the habit of thinking.

DR. PIERSON (closing): Dr. Power's case is of interest, and I think would possibly come under the group of cases that are due to emphysematous blebs. It is very possible that this case had one of those blebs, which was ruptured by a little extra exertion.

I think I saw that case that Dr. Kilgore spoke of, and just after that I think he gave the man some blowing exercises which helped expand his lung.

A few nights ago, while I was thinking about this paper, I was called out at half-past eleven to see a tuberculosis case that had been doing very well. I mention this case because it shows how suddenly symptoms of this condition happen, and how unexpected it is. This man had been doing very well, had gained thirty pounds, had a good position, and was feeling so well that he bought a new suit of clothes to celebrate his birthday, which came this week. Saturday night at 8.30 he began to feel mean. At 9.30 he was short of breath. At 11.30 respirations 45, and cold sweat all over him, though no pain. The right chest moved less than the left, there was a dull tympany and very much diminished breathing on that side, and exaggerated breathing on the other side. The condition was severe, and the man died at 1.30 that night. I think that brings out the fact that in these cases that are tuberculous, the pneumothorax is almost always fatal, because there is probably a good-sized rent, and there is no chance for it to heal over and the lung to expand.

OBSERVATIONS ON DISABLED SHOULDERS, WITH ESPECIAL REFERENCE TO SUB-ACROMIAL BURSTITIS.*

BY HILBERT F. DAY, M.D., BOSTON.

Surgeon, Boston Dispensary; Associate in Surgery, Peter Bent Brigham Hospital; First Assistant Surgeon, Beth Israel Hospital.

FOR the last four years I have been particularly interested in the cases of shoulder injury which I have seen at the Brigham Hospital, the Boston Dispensary and in private practice. As the subject has seemed to offer no definite "open and shut" means of making a diagnosis nor hard set rule for treatment, it has proved well worthy of careful study. Some of the facts which I have been able to learn may be of value to you who, perhaps, have not given much thought to them.

It may seem presumptuous for me to write a paper on this subject when we have in Boston another surgeon, namely, Dr. E. A. Codman, who is considered all over the country as an expert in shoulder injuries, and who has made an exhaustive study of them. Nevertheless, as none of his writings have been very recent, they may not have been brought directly to your attention. In elucidating the subject, therefore, I will not hesitate to use some of the facts he has worked out.

Cause. In practically all cases of shoulder disability, a history of trauma can be obtained. The order of frequency, as I have found it, is (a) direct fall on the point of the shoulder, (b) fall on the hand with strain transferred to the shoulder, (c) pull on the shoulder as by a sudden lurch of the body while hanging on a strap.

Symptoms. Generally there is at first soreness about the shoulder due to a definite contusion. This soreness may subside and then develop obstinate, persistent and often very acute pain in the shoulder. The pain is generally constant, but is sometimes intermittent, increased by motion of the arm, and is often worse at night. It is usually referred to the upper portion of the arm in the front and outer aspects, rather than posteriorly. This pain is sometimes described as running down the arm and forearm, or even up into the neck. The next most frequent and disabling symptom is *limitation of motion*, generally evidenced by loss of abduction—active abduction slightly less than passive—and accompanied by more pain. External and internal rotation (in reaching suspender buttons behind, the arm is internally rotated; and in reaching the back of the head with arm abducted, it is externally rotated) are also usually diminished as compared to normal. There is generally no deformity unless there is an unreduced dislocation, fracture or muscle atrophy due to long standing disuse.

In all cases of shoulder injury, an x-ray picture should be taken, for it frequently clears the

* Read at a meeting of the Boston Chirurgical Society, Dec. 28, 1917.

diagnosis, as without it a small fracture about the shoulder joint may be overlooked. Most of the cases of shoulder injury that have come under my observation have been seen by me several days or weeks after the initial injury and, therefore, in this study we can disregard recent dislocations and very evident gross fractures. The diagnoses of injuries seen at later periods have in their frequency appeared in the following order:

1. Sub-acromial bursitis,
 - a. Without further injury,
 - b. With tear of the supraspinatus tendon,
 - c. With calcareous deposit.
2. Injury of the supraspinatus tendon alone. (It is probably caused by pressure of the sharp, under edge of the acromion on the tendon, made during sudden, violent motion of the arm).
3. Fracture of the greater tuberosity of the humerus.
4. Loose joint capsule causing some subluxation of the humerus.
5. Traumatic periostitis.
6. Disease of the head of the humerus, as syphilis, tuberculosis or neoplasm.
7. Brachial neuritis.

As the differential diagnosis may be easy or may be quite difficult, a few words of explanation about each of the foregoing injuries may be helpful.

1. As to the various types listed under sub-acromial bursitis, it is difficult to say at first whether the supraspinatus tendon is torn. If there are calcareous deposits, they will show in the radiograph.

2. I have seen no acute case where I could be sure that the supraspinatus tendon alone had been torn. In a general way there would be complete loss of abduction with very little tenderness and pain. In chronic or long standing cases, when the bursal inflammation has disappeared, a diagnosis can be made rather easily. It is done in the following manner: Have the patient stand with arms extended in abduction to the level of the shoulders and then have him counter-abduct against downward pressure made on his arms by the examiner. A defective supraspinatus tendon, although strong enough to abduct an arm alone, allows the arm to waver under the added weight.

3. A fracture in the shoulder joint should show up in an x-ray and, therefore, if taken at a proper angle, a fracture of the greater tuberosity of the humerus would show.

4. If there is subluxation of the humerus, there is generally a slight prominence of its head in front with depression behind and no flattening of the deltoid muscle. It is accompanied by pain radiating down the arm and inability to abduct. This is rarely seen, as the acute cases are so easily reduced; and this reduction is generally accomplished by a lay person before the patient reaches a doctor.

5. When there is periostitis, it is apt to be fairly well defined and is often accompanied by fever. As this disease progresses, there are changes in the bone which are demonstrable by the x-ray.

6. Such diseases as syphilis, tuberculosis and neoplasms of the bones about the shoulder joint are chiefly diagnosed with the help of the x-ray.

7. As to brachial neuritis, I have seen only one case which I was willing so to diagnose, and in that case there was tenderness above the shoulder in the neck, and in following the case, there was later some sensory disturbance in the arm. Cases where there has been an old neck injury, or where there is a slight chronic irritation of nerves in the neck are sometimes confused with cases of brachial neuritis, for they are apt to have occasional vague pains referred to the shoulder.

As the greatest number of cases of disabled shoulders are included under the subacromial bursitis group, I am going to confine my discussion to them.

Anatomically the subacromial bursa embraces what is often spoken of as the subdeltoid bursa. This latter division disappears when the arm is adducted and is simply that portion of the subacromial bursa which lies under the deltoid muscle beyond the acromion process when the arm is adducted. The bursa is $2\frac{1}{2}$ to 3 inches in diameter. Its under surface is firmly attached to the tuberosity of the humerus and to the expansion of the supraspinatus tendon. Its upper surface is attached to the under surface of the acromion and coraco-acromial ligament, and to the under fibers of the deltoid muscle. From this description you may see that with the arm adducted the subdeltoid portion of the bursa is exposed to trauma. If this portion of the bursa is inflamed for any reason, it causes a mechanical obstacle to free abduction of the arm as it tries to slip under the acromion process. It is not generally realized that in extreme abduction it actually has to pass beneath the acromion ligament. Its function is to avoid friction at the time when the tuberosity of the humerus passes under the acromion ligament. When the supraspinatus tendon is injured or lacerated, full abduction is impossible, for it is the essential abductor of the shoulder. The deltoid muscle, as demonstrated by Codman, although popularly supposed to abduct, has its chief function as a means of holding the head of the humerus firmly under the acromion and in the glenoid cavity.

Acute, subacute and chronic cases have all come under my observation, and in certain individuals, where treatment has not been carried out properly, all three phases have been observed. In the *first type* pain is the outstanding complaint, abduction is limited by pain, and pain at night is particularly troublesome. There is also some effusion into the bursa, and the bursa is correspondingly tender to pressure. A

useful diagnostic sign of this stage and one which often surprises the patient is shown in the following way. Have the patient bend over and let his arms swing forward, then ask him to straighten up, holding his arms as they are. To his surprise he then finds he can fully abduct his affected arm without pain. This is due to the fact that the tuberosity has passed beneath the acromion. Of course the pain reappears when he lowers or adducts his arm. In the *second type*, because adhesions have then formed between the floor and roof of the bursa, the arm cannot even passively be fully abducted because the tuberosity of the humerus cannot pass beneath the acromion. This is demonstrated by showing that the scapula moves with the humerus in all its motions beyond a very few degrees of unrestricted abduction. In the *chronic type*, the adhesions having generally broken up, abduction is again possible but often painful, and sometimes jerky, due to the roughening of the bursa. Generally, the more the patient uses his arm, the more he has to suffer with pain in his shoulder, which often manifests itself some time after the actual motion.

Practically all cases of subacromial bursitis which have been under my observation long enough, have recovered despite treatment or the absence of it. The duration of symptoms seems to vary in untreated cases from six months to three years. A few cases who have been willing to carry out ideal treatment, have completely recovered in two weeks. I feel sure that proper treatment at any stage of the disease will often materially shorten its course.

Proper treatment, according to my observations, is as follows: The acute cases should be given aspirin for their pain and treated, as W. W. Brickner of New York suggests, by being put to bed "in a semi-recumbent position, supported on pillows not too soft. The affected arm is abducted on a pillow as far as it comfortably can be. A muslin bandage is then lightly looped about the wrist and carried to a convenient spot on the headpiece of the bed, where it is fastened.† The upper end of the bed is then raised on 'shock blocks' or chairs. As the patient's body little by little slides down in bed his arm travels (relatively) further and further up and thus a shoulder that obstinately resists forcible efforts at abduction yields steadily, painlessly, to this gradual countertraction, which the patient often does not even feel." This treatment has been successful in every acute case where I have used it, cures being accomplished in from five to twelve days. Aspiration of the bursa is said to be helpful when there is a large amount of effusion into it causing intense, constant pain. I have never myself used this treatment. In some acute cases where there has been a partial rup-

ture of the supraspinatus tendon, with an immediate operation, the tendon could be repaired and long weeks of disability saved. Also, as adhesions form in the bursa and there are often calcareous deposits in or below the bursa towards the end of the acute stage, these cases could well be treated by operation and so shorten convalescence. As I am advising operation for a certain number of patients, knowing it will give quick relief of symptoms, a description of the operation is not out of place.

The patient should lie on his side on a flat table. Local anesthesia with novocaine is perfectly satisfactory, but a general anesthetic is more often used, the forearm and upper arm wrapped separately, so that motion at the shoulder joint can be obtained during the operation. A two or three inch incision should be made from the acromion process down over the greater tuberosity of the humerus. The fibers of the deltoid muscle should next be separated by blunt dissection and retracted. When this is done the roof of the bursa will be exposed. Its roof can then be carefully incised for practically the entire length of the incision and its sides retracted so as to expose its interior. When this has been done, pulling downward on the arm will sometimes allow the bursa to fill with air and so make its cavity more easy to explore with a finger. Villous masses or adhesions can now be cut away. The floor of the bursa in acute cases may be found to be reddened and puffed up with a whitish center like a boil which, when incised, exudes a whitish material varying from a smooth fluid in these acute cases, to a thick, granular, sand-like substance in the older ones. This substance should all be scooped out, but not forcibly curetted. When this is done the floor of the bursa is retracted out of the way so that the tendon of the supraspinatus is brought in view. If there is a tear in it, it should be repaired. This can be done with vertically placed sutures, preferably chromicized catgut, though silk may be used. The wound may now be closed carefully in layers. The fibers of the deltoid fall together, but are best approximated by a couple of catgut sutures not placed deep enough to pierce the roof of the bursa. The arm is then put up in abduction, preferably in a plaster-of-paris spica. This plaster-of-paris spica, in my opinion, is not absolutely essential, for I feel that if the arm is held in abduction, as described above, it will do perfectly well, though perhaps a firm dressing for the few hours immediately following operation may make the patient more comfortable.

The subacute cases, namely, those where adhesions have formed, require more ingenuity and patience in their treatment. Generally speaking, they may be handled in three different ways.

a. By an operation (such as has just been described) with the object of separating adhesions and, if necessary, removing the bursal floor.

† Since first drafting this paper I have accepted and used a modification suggested by Codman. He binds a splint to the back of the forearm, extending from the hand to the elbow, and runs cords from either end of it to the head of the bed. By this means a distribution of traction takes the place of a pull on the wrist. The cords are so arranged that they can run along the top of the bed and give the arm a little pull.

b. By forcible breaking up of adhesions with manipulations, the patient being anesthetized.

c. By gradual stretching, as is accomplished by nature without treatment, or more rapid gradual stretching by massage, passive motion, Zander treatment or active exercises.

The treatment of *chronic* cases, namely, those cases where the adhesions have been broken up and where motion is possible but perhaps painful, generally needs patience and considerable time. Patients of this type should have baking and massage at regular intervals, generally every other day, and should be given definite exercises to follow up by themselves. These exercises should be graded according to the amount of reaction they set up, and are best taken at night when they may be followed by a period of rest. One of the best preliminary exercises is to have the patient put his hand on a wall and slowly abduct the arm, creeping up the wall with his fingers. In this way his arm will receive some support and the abduction is accomplished gradually.

In all cases, as a routine procedure, the teeth, tonsils, gastro-enteric tract and in fact any possible focus of infection must be eliminated. It is not my belief that subacromial bursitis can be caused by infection. Trauma is essential. However, I do believe that, given an injured bursa, secondary infection may keep up its inflammation.

CONCLUSIONS.

Subacromial bursitis is a definite demonstrable disease and has certain characteristic symptoms. Its prognosis is ultimately good. Its cure can be hastened by proper treatment.

In the Peter Bent Brigham Hospital Out-door Department, I have observed and tabulated 64 cases diagnosed as subacromial bursitis during the years 1915, 1916, and nine months of 1917. More of these cases have been seen in the last year and a half, due to the increased size of the clinic. Of these there were thirty-two males and thirty-two females. The ages varied from a child of ten years to a woman of sixty-five, and apparently age has no particular significance except that the younger cases seem to recover from symptoms more rapidly than the older ones. Occupation, also, seems to be an unimportant factor, for in this series there were clerks, nurses, students, teachers and laborers. In a general way, the more highly educated the patients, the quicker they get well because they are more persistent in following treatment. Causes given by them for their disability are as follows:

Direct trauma,	29 cases
Indirect trauma,	6 " (as by falling on the hand or elbow).
Unusual use of arm,	10 "
Unknown,	19 "

At the time of their first visits to the hospital, these cases fell into the following divisions:

Acute,	26,
Subacute,	25,
Chronic,	13.

The cases made visits ranging from one to sixty per patient. In a general way, the acute cases made only a few visits and the chronic cases made many. One or more forms of treatment, as outlined in the foregoing paper, have been tried with each case. Six cases have been mobilized under an anesthetic, three have been operated and three others have refused to submit to the operation advised.

THE RED STREAK: A SIGN OF DISEASE.

By EDWARD A. TRACY, M.D., BOSTON.

IN THE JOURNAL of December 6, 1917, was published, "A Method of Testing the Vasomotor Reflexes of the Skin." By using the method therein described in the investigation of conditions both of health and disease, it was found that in a large number of disease conditions the reflex vasodilation—or better termed, "the reflex diastole"—of the peripheral vessels of the face, was notably lengthened in duration. The normal reflex diastole was found in that location not to exceed fourteen seconds—the stimuli evoking the reflex being a stroke of a smoothened wooden tongue depressor applied with a pressure approximating two and a half ounces.

When the reflex diastole lasted more than fourteen seconds, invariably in non-medicated cases, a diseased bodily condition was found present.

This abnormal reflex diastole may be graphically termed the "red streak." The red streak is defined, therefore, as the reflex diastole lasting over fourteen seconds, evoked by stroking the face with a suitable instrument, such as a smooth wooden tongue depressor, with a pressure approximating two and a half ounces. Preferably, a cheek is stroked, otherwise the forehead. As before stated, when present in non-medicated cases, invariably a diseased bodily condition was also present. The red streak may be taken, therefore, as a sign of disease. This view is based upon a study of 392 cases in which the red streak was found present. In 388 of these cases the diseased bodily conditions named in Tables I and II were found. In four cases, a mild hyperthyroidism was believed present from the symptoms, but with no facilities to test the metabolism in these cases, the diagnosis remains unconfirmed.

In 310 of the cases—79% of them—a purulent condition in some part of the body was found; the remaining 82 cases being non-purulent disease conditions of the body. For this reason, in non-medicated cases, when the red streak is constantly present when tested for, the first thought is of pus. If thorough search excludes a pus focus, there is present infection, or

a disturbance within the domain of endocrinology—a disturbance in the balance of the internal secretions—and manifested by lymphatism, hyperthyroidism, hyperplastic thymus, diabetes mellitus, etc. (See tabulation of cases with the red streak associated with non-purulent disease conditions.)

The relation of the red streak to the thyroid secretion has been shown in cases of mild myxedema, in which the normal reflex diastole of the face to stroking was absent. In these cases, on administering to them thyroid extract, the red streak appeared. Digitalis medication can also lengthen the normal reflex diastole of the peripheral blood vessels, and so give the red streak; likewise, pilocarpin.

Functional heart cases—so-called nervous heart—is found associated with the red streak. Twelve cases were met with and tested. All gave the red streak. In four of these cases, the phenomenon of partial fading and intensifying of the streak, i.e., active systole and diastole of the peripheral vessels, was visible.* This phenomenon, so far as I am aware, has not been observed before; at least I have met with no account of it in the literature. In one case in which this phenomenon was noted, at the same time there was present reduplication of heart sounds and irregularly acting heart. Some weeks after, on examining this case again, the red streak was found present, but the active systole and diastole of the vessels forming it were absent. The irregular action of the heart, noted before, was also absent.

A practical illustration of the value of the red streak in diagnosis is furnished in focal infection. In several cases of apical abscesses, a positive diagnosis was made from the presence of the red streak associated with slight tenderness to pressure over the root that had at a previous period been opened and treated. The diagnosis in these cases of apical abscess was confirmed by radiograph or by evidence furnished on root extraction.

In this brief paper no attempt is made to treat of the causation of the red streak. While such an essay might interest students of vegetative neurology, it would add nothing to the clinically determined fact that the red streak is a sign of disease.

TABLE I.

PURULENT DISEASE CONDITIONS FOUND ASSOCIATED WITH THE RED STREAK.

1. Purulent gingivitis (accompanying dental caries)	192 cases
2. Purulent gingivitis and acne	1 case
3. " " and hypertrophied tonsils	35 cases
4. Purulent gingivitis and mumps	1 case
5. " " and purulent anterior nares and adenoids	1 case

* The phenomenon of active systole and diastole of peripheral vessels as a reflex to stroking the face, was observed, also, by school nurses Edith W. Sheehan and Emily A. Snow.

6. Purulent gingivitis and eczema	3 cases
7. " " and impetigo	1 case
8. " " and cervical adenitis	1 case
9. Purulent gingivitis and functional heart trouble	1 case
10. Purulent gingivitis and herpes simplex	1 case
11. " " and otitis media chronica	1 case
12. Purulent gingivitis and purulent posterior nares	1 case
13. Pyorrhea dentalis	13 cases
14. " " and asthma	1 case
15. Alveolar abscess	3 cases
16. " " and pyorrhea dentalis	1 case
17. Purulent anterior nares	6 cases
18. " " and purulent gingivitis	1 case
19. Purulent posterior nares and hypertrophied tongue papillae	1 case
20. Otitis media chronica	4 cases
21. Furunculosis	10 cases
22. Stye	9 cases
23. Skin ulceration	5 cases
24. Skin ulceration and hypertrophied tonsils	2 cases
25. Impetigo	2 cases
26. Ulcer and eczema	2 cases
27. Acute tonsillitis	3 cases
28. Acute cervical adenitis	1 case
29. Acute sublingual adenitis	2 cases
30. Acute occipital adenitis	1 case
31. Chronic blepharitis	1 case
32. Infective arthritis with pus in urine	1 case
33. Suppurating mastoiditis	1 case
34. Phthisis pulmonalis	1 case
35. Cerebral meningitis	1 case

TABLE II.

NON-PURULENT DISEASE CONDITIONS FOUND ASSOCIATED WITH THE RED STREAK.

1. Hypertrophy of the tonsils	26 cases
2. Hypertrophy of the tonsils and cervical adenitis	1 case
3. Hypertrophy of the tonsils and cervical and axillary adenitis	1 case
4. Hypertrophied tonsils and hypertrophied tongue papillae	11 cases
5. Hypertrophied tonsils and hypertrophied tongue papillae and cervical adenitis	1 case
6. Hypertrophied tonsils and adenoids	2 cases
7. Cervical adenitis (chronic)	2 cases
8. Cervical adenitis and hypertrophied tonsils and hyperplastic pharyngitis	1 case
9. Cervical adenitis and hypertrophied tongue papillae and hyperplastic pharyngitis	1 case
10. Cervical and axillary adenitis	1 case
11. Hypertrophied tongue papillae (hypertrophied tonsils excised 2 years before)	1 case
12. Mumps and hypertrophied tongue papillae	1 case
13. Mumps—4th day after onset	1 case
14. Mumps—8th day after onset	1 case
15. Mumps 12 days after onset, and axillary adenitis	1 case
16. Functional heart trouble	12 cases
17. Eczema	8 cases
18. Hyperthyroidism	5 cases
19. Hyperplastic thymus	1 case
20. Diabetes mellitus	2 cases
21. Syphilis—3d day of chancre	1 case
22. Syphilis—3d month of disease, untreated	1 case

WELFARE INSURANCE AND THE FACTORY.

By J. F. CURRAN, M.D., WORCESTER, MASS.

At the present time there is much discussion of welfare insurance, or, as it is more commonly called, health insurance. The plan, as proposed, is that the State bear two-fifths of the cost of maintenance, the factory two-fifths and labor one-fifth.

Erroneous conclusions have been arrived at regarding the value of health insurance, due to a misconception of the true meaning of insurance. First of all, insurance does not imply prevention. Many of the enthusiastic supporters of social insurance plans have claimed that compulsory health insurance will prevent sickness. Let us remember that insurance is not prevention, but that it is indemnity for loss. Health insurance is proposed as a means to replace the wages which are lost by illness. To devise the methods by which funds could be collected and payments made would be a comparatively simple task. All that is necessary would be to collect the required data and prepare a table of rates. But there are other more important phases of this question which must necessarily be considered.

The medical profession is concerned in this, since it must decide whether the claimant is entitled to compensation or not. A difficulty will arise when the physician is called upon to make this decision; also, when he attempts to give medical attendance.

Are we to have salaried physicians, such as a board like the medical corps of the army and navy, who will give their whole time to insurance work, or are we to have individual physicians with their fees? This is a question, the decision of which must be left to the medical profession. It cannot be fixed either by the State, corporations, or a group of individuals.

In Germany, where such a plan has been tried, physicians have refused to give treatments. This has cost the German nation hundreds of thousands of dollars, and there has not been any decrease in the number of accidents or in the number of cases of illness.

In Ohio, social insurance has not been a success. The rates per \$100 of payroll have increased alarmingly without any progress being made in prevention measures.

Social insurance has one advantage for the worker—it partially replaces the wages he loses by reason of his not being able to work during a period of sickness. Under the proposed working plans there are no discernible advantages to the employer.

Its disadvantages, however, are manifold. Social insurance means that individuals will lose a share of their independence. It will be a boon to the loafer and industrial hobo.

The whole scheme, as it has been outlined, is not far-reaching enough. For example, there is no provision made for the men who are self-

employed, such as the farmer, the news vender, and many others. It taxes the healthy man and the mental and physical defective at the same rate, and for that reason alone it is unjust. The victim of alcohol pays no more than the normal man, but he receives larger benefits. Again, the clean-living man pays for the support of his fellow workman incapacitated by venereal disease, or its after-effects.

The labor leaders tell us that the average workman complains bitterly of the conditions under which he works; but let us provide him with social insurance of about \$10 a week while ill, and he is perfectly satisfied to work under the same conditions. This would be a backward step for preventive medicine. It does not seek to remove the causes for illness and accidents.

Many of the proponents of this type of insurance fail to realize that it does not exact anything more from the employer than the payment of his share of maintenance.

Moreover, it might directly prevent many employers from taking the necessary steps toward making their factories hygienic and healthful. If the employer merely has to pay his share, naturally he will do no more than the law specifically requires. This is manifested in the attitude the manufacturer takes toward accident insurance. He pays his premium and lets the matter end there. If, however, the number of accidents reduces his production and causes an increase in his labor turnover, then he does what he can to prevent accidents. Sickness decreases production and increases labor turnover, so we may be justified in thinking that the employer will take an active interest in any plan that will prevent sickness.

Convincing the employer and enlisting his aid are not sufficient. We must have the coöperation of the employee. He must do his share in the line of preventive measures.

This, then, is our problem. In my opinion the time for social insurance is not opportune. What we need is a widespread campaign to bring about preventive measures relating to sickness and accidents and to introduce the practice of surgery in the factory.

Every factory should have a hospital and it should be conducted by a trained industrial surgeon. It is true that the cost of maintenance is great, but the hospital shortly proves its worth.

For concerns who do not feel that they can afford a dispensary, I have this plan to suggest. Let two or three small concerns within easy reach of each other club together to maintain a small hospital in each factory. They could secure the services of a full-time nurse for each, and one surgeon, who would spend a stated number of hours at each factory daily. The next step would be to introduce the following requirements:

1. To make physical examination of all prospective employees and re-examine all physically defective employees, and to advise corrective measures.

2. To treat accidents immediately after they occur and to give subsequent treatment.

3. To make examinations and give advice in cases of sickness.

4. To formulate and control sanitation measures throughout the works.

5. To promote health education among employees.

Physical examinations are necessary in order that men may be recommended for work best suited to their physical condition, so that a minimum amount of lost time, due to sickness, will result. Each man should be compelled to report to the hospital for treatment of accidents and minor illnesses.

If the man is so ill that he is unable to work, he should be permitted to choose his physician; but he should pay that fee himself. I favor this procedure for two reasons: the man in this case will be better satisfied because he feels that he has a doctor who is personally interested in his case, and it will gain for the industrial surgeon the coöperation of the general practitioner who is not actively engaged in industrial work. More than that, since the general practitioner is mainly dependent on the laboring man for his livelihood, he should retain this source of income. Under the panel system of social insurance this would not be permitted, and the physician will suffer greatly if the measure becomes effective.

In conclusion, I believe that preventive medicine, as a department of industrial hygiene, should receive more attention than it now does.

This, plus a better coöperation between employer and employee on those unfortunate cases which will always exist, can in a large measure correct the condition of the unfortunates in question.

State insurance in the form of law does not meet the situation. It has proven so in Germany and England, where it has been experimented with on a large scale.

I believe the final solution will lie in the industries themselves settling this question, as they have those of safety and prevention of accidents.

THE CONTROL OF A SMALLPOX EPIDEMIC BY VACCINATION.

By A. G. GOULD, Ph.B., M.D., AKRON, OHIO.

DURING the summer of 1917, a few cases of smallpox developed in the factory of The Goodyear Tire & Rubber Co. These cases were nearly all of unknown origin and occurred mostly in the people who had come from the South, where vaccination laws are not so rigid as in the Northern states. None of these cases had ever had a successful vaccination.

During the autumn, cases broke out in the factory numerically as follows:

September	2
October	10
November	32

Few of these cases were seen prior to the onset of their eruption, and none were recognized as smallpox until the eruption appeared.

In view of the fact that cases were also present in Akron, and that new cases were developing rapidly, other than those in the Goodyear factory, and the pest house was very limited in size, it seemed advisable in November to prevent the further spread of the epidemic.

Inasmuch as all cases of smallpox in Akron had developed in those who had never been vaccinated with success, with one exception, and that in a man vaccinated forty years before, it seemed best to compel those in the factory who could not show scars of vaccinia or variola, to undergo vaccination.

Of the 15,000 employees of the company, this affected about 5,000. Many were vaccinated by local physicians. At the Goodyear Hospital, 1647 were vaccinated and all subsequent dressings were made there. There were no complications in those vaccinated at the Hospital, and no serious complications in any of the 5,000. The results follow:

Total vaccinations at Goodyear Hospital 1647	
Total vaccinations successful	1415
Total vaccinations result unknown, due to leaving employ	90
Percentage of known "takes"	85.9%

Much of the credit for the high percentage of "takes" must be given to the quality of the vaccine.

Ten of those whose vaccinations were unsuccessful had had smallpox, and one of those who left the company's employ had also had the disease.

The result of the vaccination programme manifested itself immediately. Three cases of varioloid developed in December, but there has been no case of true smallpox in the factory since.

So valuable did this work seem, we have made it a rule to vaccinate all new employees without good evidence of a former successful vaccination.

All of the cases of variola were mild and only one case required bed care, after the appearance of the rash.

Conclusions:

(1) Smallpox occurs, almost without exception, only in those not protected by vaccination.

(2) Vaccination protects longer than the assigned seven years.

(3) Vaccination should not be followed by complications.

(4) Vaccination *en masse* controls smallpox.

Clinical Department.

PREOPERATIVE DIAGNOSIS BY ROENTGEN RAY OF HAIR CAST OF STOMACH.*

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BUTTERWORTH,¹ in August, 1909, reviewed at some length the literature and reported 42 cases of hair ball, in only five of which the correct diagnosis had been made before operation. Moore,² in 1914, was able to add eleven more from the literature which, with one of his own he reported at the time, brought the number of known cases up to 54; but he made no mention of the number diagnosed correctly, if any. Rudolph Matas of New Orleans,³ later in that year made an exhaustive survey of the subject and was able to collect some 76 cases of gastrointestinal hair balls or casts. Indeed his paper, presented before the *Southern Surgical and Gynecological Association* at Asheville, December 15, 1914, not only is to date the most complete exposition of the particular subject at hand, but may well stand as a model for writers on medicine.

I have found but two other cases reported since that time, so that it is fair to conclude that this type of gastric foreign body is a rarity, but not so infrequent but that one should bear it in mind as something more than a possibility in gastro-intestinal diagnosis.

Matas laid stress upon the value of roentgen examination in reaching a diagnosis in these cases and reported eight correct diagnoses by means of preliminary x-ray examination. Thurston Holland of London,⁴ was the first to publish the roentgenographic appearance of hair cast of the stomach. While in this case he had not made a positive diagnosis of the actual condition present before operation, his colleague Barclay had suggested it. Very shortly afterwards Holland⁵ examined a similar case and was able to make a positive diagnosis by x-ray before operation. His description of his roentgen findings in this case are now somewhat of a classic.

The roentgen appearance of my own case reported here is quite distinct from that of Holland's, and while in the case in question I made a definite diagnosis of hair ball, it would not be fair so to conclude from its roentgen appearance alone. In fact, the roentgen evidence in itself only justified a diagnosis of intra-gastric tumor. Malignancy could not be ruled out absolutely by x-ray, but could rather definitely when considered in conjunction with the pa-

tient's history and other clinical data. Benign tumors of the stomach are rare, and while a lipomatous stomach wall might give us the appearance seen in our case by x-ray, the roentgenoscopic (fluoroscopic) examination made while the patient ingested the opaque meal, satisfied us that we were dealing with a foreign body.

The patient, Mrs. J. H., aged 29, was seen in consultation with Dr. H. H. Germain at the Cambridge City Hospital, November 5, 1917. Small of stature, well nourished and apparently of normal mentality, the patient presented objectively a palpable mass occupying the epigastrium, right upper and a portion of the right lower abdominal quadrants that seemed contiguous with the liver. Clinically it was thought the mass might be a new growth or cyst of the liver, involving the stomach.

The following history was elicited from the patient:

Occupation, housework; twenty-nine years old, married, white.

Family History. Father and mother living and well, six brothers living and well, seven brothers died when infants, causes unknown. No history of tuberculosis, cancer, syphilis, diabetes, Bright's disease.

Past History. Mumps, measles, whooping cough when young. Fractured wrist at the age of ten years. Scarlet fever at the age of twelve years. No diphtheria, no diabetes. Tonsillitis three or four times. Catamenia established at the age of eleven years, regular with a few pains, headaches, and has fainted twice. Eight years ago strangulated left ovary by carrying marble slabs. Since then has had considerable pain at menstrual periods. Denies venereal diseases. Married three years ago. Five weeks ago miscarriage of five months' duration, due to fall two days previous. Two years ago tonsillitis.

Present illness. Patient states that in October, 1916, she vomited three or four times a day, especially when drinking water. Could retain solid food all right. Continued to vomit for three or four times for some over three months, the vomitus being a light color and later became yellow, and patient still continued to vomit three or four times a day for nearly four months. Then she did not vomit at all for about one month. Then she began to have vomiting spells, vomitus being yellow in color. January, 1917, patient first noticed a lump in the region of the stomach which has continued to grow larger. Has had sharp, piercing pains at times and at other times would be dull. Pains were localized about the region of the stomach. Patient says she has lost twenty-five pounds weight between October, 1916, and January 1917. Has continued about same weight since. Has had good appetite, but ate small amount of food at a time and at frequent intervals. Patient when asked if she could in any way account for loss of hair from head says that her hair has been coming out some for over a year.

* Read at the Mid-winter Meeting of Eastern Roentgenologists, Atlantic City, Jan. 4, 1918.

That she does not know of any sickness to cause same or other reason.

It should be noted in passing that in obtaining the patient's history the house officer had noticed the patient's thinness of hair, and the accustomed inquiry in regard to exposure to specific disease as well as laboratory tests were made, but no thought was given to the real cause.

The patient was given the usual contrast meal for x-ray examination and particular care given to the fluoroscopic evidence. The opaque meal was seen to trickle unevenly down and about some obstruction that occupied the major portion of the stomach, since only the stomach antrum and duodenum were seen to fill with the opaque meal which passed rapidly on into the small bowel. The pars cardia and pars media presented a cystic appearance due to the opaque medium passing between the stomach wall and the foreign body which was of uneven density.

The fluoroscopic image and that registered upon the photographic plate giving us the appearance as seen in Fig. 1. The intragastric



FIG. 1.—Roentgenographic appearance of author's hair cast of stomach.

character of the mass was readily determined, and by the use of the fluoroscope, it was seen to be freely movable and not connected with the liver. A positive diagnosis of hair ball of the stomach was made and on November 7th Dr. Germain removed a hair cast of the stomach (Fig. 2), weighing twenty-nine and one-half



FIG. 2.—Hair cast of stomach as removed at operation.

ounces, nine inches long, with a cardiac diameter of three inches, that occupied the entire stomach save for the antrum.

Even when confronted with the evidence, no admission of the hair-eating habit could be obtained from the patient, her husband or other relatives.

REFERENCES.

- ¹ Butterworth: Jour. A. M. A., 1909, Vol. lili, p. 617.
- ² Moore: BOSTON MEDICAL AND SURGICAL JOURNAL, 1914, Vol. clxx, p. 8.
- ³ Matas: Surg. Gyn. and Obst., Vol. xxi, p. 594.
- ⁴ Holland: Arch. Roent. Ray, July, 1913.
- ⁵ Holland: Arch. Roent. Ray, March, 1914.

Book Reviews.

A Manual of Organic Materia Medica and Pharmacognosy, an Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs. (With syllabus of inorganic remedial agents.) Comprising The Botanical and Physical Characteristics, Source, Constituents, Pharmacopoeial Preparations, Insects Injurious to Drugs, and Pharmacal Botany. By LUCIUS E. SAYRE, B.S., Ph.M., Dean of the School of Pharmacy; Professor of Materia Medica

in the University of Kansas; Member of the Committee of Revision of the United States Pharmacopeia; Director of Drug Laboratory for State of Kansas. Fourth edition, revised. With 302 illustrations, the majority of which are from original drawings and photomicrographs. Philadelphia: P. Blakiston's Son and Company.

The author has prepared a book which does not differ very considerably from the other editions which have preceded it and which continues the merits and often the errors of the earlier editions. It confines itself, as the title indicates, almost entirely to a description of crude and prepared drugs, with but slight reference to their therapeutic action.

As a text-book for students of pharmacology, it is undoubtedly valuable, but for the physician it presents but little of interest. Some of the views of the therapeutic application of drugs are extremely vague, if not positively incorrect. For instance, on page four, the author in his description of acids, declares that, "When much diluted, they are administered for the purpose of checking hyperacidity of the stomach, by stimulating the production of the alkaline pancreatic juice and checking acid gastric juice." If this were true, then much of the modern investigation is futile.

It is unfortunate, too, that with drugs, first introduced under a fanciful name by the manufacturer, which have been later adopted by the pharmacopeia, with a name conveying some significance as to their composition, the old name is still employed. As an example of this custom, one need only mention the employment of the terms, "aristol," "aspirin," "dermatol," "diuretin," "salol," and "urotropin." It would seem that with the official adoption of these preparations, the older names might be left in abeyance.

The illustrations throughout the book are admirable and many of them original with the author.

There is a fairly good, though brief, description of serotherapy, in which a fairly critical statement of the therapeutic value of the different substances employed is given.

Chapter II includes reagents and processes which will be of value to those engaged in laboratory work, both on vegetable and animal products.

One is astounded at the vast number of drugs, many of which have, in later years, been pronounced worthless, included in this work.

Diet for Children. By LOUISE E. HOGAN (Mrs. John L. Hogan). A Complete System of Nursery Diet with Numerous Recipes; Also Many Menus for Young and Older School Children. A Home and School Guide for

Mothers, Teachers, Nurses and Physicians. Author of "How to Feed Children," "A Study of a Child," "The Introduction of Domestic Science in the Schools of New York City," U. S. Government Bulletin No. 56, "Timely Hints for Mothers and Nurses," "The Child in Sickness and Health," etc. 160 pp. Indianapolis: The Bobbs-Merrill Company, Publishers.

In this little book, Mrs. Hogan, who is well-known as an authority on the care and feeding of children, has covered the question of diet. In it she tells what foods to give children, and at what times; discusses pure food and its value, and gives a large number of recipes and menus. It is marked throughout by common sense, and should be of great assistance to mothers, nurses and all others who are concerned with the care of children. The point of view is, however, at times that of ten or more years ago rather than of today. In general, we agree with the diet which she recommends, but differ with her in certain respects. It seems to us, for example, that she is rather too much afraid to begin to give meat to children and that she is rather too partial to desserts and cream. These are minor matters, however, and, on the whole, there is little to criticize in the book.

Principles of Diagnosis and Treatment in Heart Affections. By SIR JAMES MACKENZIE. London: Oxford University Press.

The preface explains fully the purpose of this book of 250 pages. The contents were originally prepared as lectures for postgraduate students and workers in the cardiac department of the London Hospital. On account of the war, they were never delivered, but are now published in somewhat changed form. Sir James Mackenzie utilizes this opportunity to express his personal opinion in regard to many cardiac problems. The book is not a treatise or a text-book, nevertheless, the whole field of cardiac disease is covered fairly thoroughly. Sir James Mackenzie's work is too well known through his other publications to justify extended comment. In the book under discussion, one gets Mackenzie's personal viewpoint in regard to the significance, both present and future, of the information that is being so rapidly acquired by means of the various instruments of precision in cardiac disease. On this subject, Mackenzie, himself a pioneer and a considerable contributor, can justly speak with authority.

Traumatic Pneumonia and Traumatic Tuberculosis. By F. PARKES WEBER, M.A., M.D., F.R.C.P., Lond. London: Adlard and Son and West Newman.

This monograph, reprinted with additions from articles in the *London Clinical Journal* of

July, 1916, discusses the importance of the element of trauma as a factor in the cause of pneumonia and tuberculosis. The first part, devoted to traumatic or contusional pneumonia, reports several cases, and refers briefly to the literature of the subject. The second part treats at greater length of similar relations in tuberculosis. The idea is not new, but it has hardly been so extensively dealt with in previous publications. Logically, there seems little to contradict in the author's contention, and this monograph effectively emphasizes the clinical possibility.

The Biology of Tumors. By C. MANSELL MOULIN, M.A., M.D., Oxon., F.R.C.S. London: H. K. Lewis & Company.

This monograph is an expansion of the Bradshaw Lecture delivered by the author before the Royal College of Surgeons in 1912. The proposed classification of tumors rests on their biological mode of origin. The first class is due to the sudden awakening of the innate reproductive power of tissues; the second class to failures of detail in carrying out the normal structures of the body. On this basis the author divides all tumors into two great groups, of which the former may be described as truly neoplastic, the latter as representing the limited group of fetal rests or embryonic inclusions. Most interesting is his discussion of conditions that lead to the production of gemmation tumors of the first class. Development or evolution, he believes to be the restraining influence against this process, an influence which may be broken down by adverse chemical or mechanical conditions. His classification is not classic and appears philosophical, rather than scientific. But where all theories are still largely hypothesis, it deserves attention on its own merits.

The Year-Book of the Bureau of Preventable Diseases. By JOHN S. BILLINGS, M.D. Department of Health of the City of New York. Monograph Series, No. 14.

The Department of Health of New York have superseded the publication of their yearly Handbook by this considerable monograph, which describes in detail the procedure of the Department of Health in the supervision of preventable diseases in New York City. It includes a statement of the organization of the department, and of the bureau of preventable diseases, the functions of the bureau, the sanitary code, that is, the authority under which the bureau operates, and its regulations. It gives in detail the rules and regulations of the bureau in its management of infectious diseases, with tuberculosis, including clinics and camps and all institutions for the care of tuberculates under the control of the bureau. The division of epidemiology, an outgrowth of the division of typhoid fever, covers diphtheria, scarlet fever, and such spor-

adic diseases as spinal meningitis and poliomyelitis. The division of venereal diseases, with a description of the management of animal diseases, and a description of the work of industrial hygiene, conclude the volume. As a complete and clear statement of the execution of sanitary supervision of a large city the book is valuable, not only to those coming in contact with the department, but to all who are concerned with public health administration.

The Organism as a Whole. By JACQUES LOEB, M.D., Ph.D., Sc.D. New York and London: G. P. Putnam's Sons.

In this volume, published in Putnam's science series, Dr. Loeb continues the development and exposition of the mechanistic conception of life and its phenomena, already made familiar through his previous works. In this exposition he correlates many of the facts hitherto observed and described separately, and presents a perspective view of the organism as a whole, tracing its career from the origin of life through the various stages of individual and generic development, through regeneration, adaptation and evolution, to death and dissolution. Of particular interest in view of Loeb's earlier work, are the chapters on fertilization, artificial parthenogenesis, the determination of sex, and the mechanism of Mendelian heredity. The book is well illustrated with fifty-one figures, including a few full-page plates. Whatever one's agreement or disagreement with the author, his monograph is of extreme interest as a contribution to the philosophy of science.

Text-Book of Surgical Operations. Illustrated by Clinical Observations, for Physicians and Students. By PROF. FEDOR KRAUSE, Privy Medical Councillor, Directing Physician Augusta Hospital, Berlin, in association with EMIL HEYMAN, M.D., Chief Physician, Augusta Hospital. Translated into English and Edited for American Readers, by ALBERT EHRENFRIED, A.B., M.D., F.A.C.S., First Assistant Visiting Surgeon, Boston City Hospital; Junior Assistant Surgeon, Children's Hospital; Surgeon, Boston Consumptives' Hospital. In six volumes, Volume II. With 373 illustrations in two or more colors. New York: Rebman Company.

The second of the six volumes of Krause's Surgical Operations contains about 700 pages, and is uniform in binding and general appearance with Volume I. It deals with operative surgery of the mouth, jaws, neck and brain. It is profusely illustrated with 300 cuts and more than as many colored plates.

It will be recalled that this large system of operative surgery is based upon the case method; a brief description of technic is outlined, and the precise procedure carried out in an actual case then follows in detail. While of course this cannot be done in every single instance, it is the plan upon which the whole work is based. The result is vivid and interesting, free from the ordinary machine-like dullness of many older treatises upon the subject.

Nothing has been spared to make the volume completely satisfactory.

A Text-Book of Histology. By FREDERICK R. BAILEY, A.M., M.D. Fifth Revised Edition. New York: William Wood & Co.

This fifth edition of a standard textbook of histology contains no important change in the original general plan and scope of the work. The text, however, has been thoroughly revised and some parts of it rewritten. Some figures have been added and the entire work is now profusely illustrated, with a well-selected series of three hundred and ninety-two text cuts, including one insert diagram illustrating the more important cerebellar connections. The chapter on the nervous system, rewritten for the third edition and revised for the fourth by Dr. Oliver F. Strong, deserves particular commendation. The work should continue to fill its useful place as a textbook for teachers and students.

Wound Infections, and Some New Methods for the Study of the Various Factors Which Come into Consideration in their Treatment. By COLONEL SIR ALMROTH E. WRIGHT, M.D., F.R.S., Consulting Physician to the Expeditionary Force. Being an address delivered before the Royal Society of Medicine, and taken from the research laboratory, attached to No. 13, General Hospital, Boulogne-sur-Mer. New York: William Wood & Company.

A small book of less than 100 pages. Wright considers, discusses and summarizes his views upon wound infections. It is, of course, an examination of the question of antiseptics as compared with physiological methods of dealing with wounds already infected. The question is, what shall we do when we are confronted by an existing inflammatory process? Wright believes in a 5% solution of common salt, with or without the addition of $\frac{1}{2}$ per cent. of sodium citrate. "This brings into play osmotic forces, and 'draws' the lymph out of the walls of the wound by a *vis à fronte*. The sodium citrate is added with a view to decalcifying the outflowing lymph and rendering it incoagulable.

"It may perhaps be allowed to say with regard to this lymphagogic solution—or, rather, with regard to the simple 5 per cent. salt solution, which I find works in most cases equally—that

it has in this war proved itself pre-eminently useful. When brought into action upon a dry and infiltrated wound, or a wound that is foul and covered with slough, it resolves the induration, brings back moisture to the surfaces, and cleans up the wound in a way that no other agent does. Applied in gaseous gangrene in the form of a wet dressing to incisions which have been carried down into infected tissues, it causes lymph to pour out of the wounds, and arrests the spread of the infection. And, again, applied in gaseous gangrene to an amputated stump in cases where it has been necessary to leave infected tissues behind, it reverses the lymph-stream and draws out the infected lymph—saving life in almost desperate conditions."

Wright further adds that it has in this war proved itself pre-eminently useful. It has been asserted that antiseptics, at least in the present war, have been used by those in the field near the front, whereas the physiological methods and the non-use of antiseptics have been advocated from the laboratories; but it would seem from Wright's little book that there must be exceptions to this statement, and it is certainly most desirable that the use of so simple a method as a five per cent. common salt solution, with or without sodium citrate, should be thoroughly investigated in a dispassionate manner by a large number of competent surgeons under all conditions. It is hard to read Wright's statement without feeling that his arguments against antiseptics are very strong.

A Laboratory Manual of Organic Chemistry for Medical Students. By MATTHEWS STEEL, Ph.D. First Edition, First Thousand. New York: John Wiley & Sons. London: Chapman and Hall.

This monograph, originally compiled as a laboratory guide for medical students, constitutes a practical course in organic chemistry and aims, without burdening the student with a mass of unessential data, to supply the demand for a broader training than was formerly required in experimental chemistry. The text is conveniently grouped into seventeen chapters, and is divided continuously into two hundred and five numbered sections, each representing an experiment. Every right-hand page is left blank for laboratory notes. There are two appendices; the first contains tables of international atomic weight, specific gravity and percentage of alcohol and freezing mixtures of powdered ice and various salts. The second appendix contains a tabulated list of reagents and solutions. There are no text illustrations. Many of the data in the chapter on alkaloids were obtained from Antenrieth's "Detection of Poisons and Powerful Drugs." The manual should be of value to both students and teachers of organic chemistry.

Habits that Handicap; The Menace of Opium, Alcohol and Tobacco, and the Remedy. By CHARLES B. TOWNS. New York: The Century Company.

Every physician knows something of the grave dangers from the use of habit-forming drugs, particularly narcotics, and this book gives interesting points of view of this subject from a man who, though not a physician, has had unusual opportunities for informing himself. A person of this sort is sure to run to excess in statement, and this, too, is found in this book—as that in the introduction, that deprivation of the drug means death, and in statements such as that in the great hospitals in London, Paris, and Berlin, he found the physicians ignorant of how to treat cases of alcoholic mental disturbance. Of course, the weakest point of the book is the implied claim that the author's method of treatment of drug addictions is the best method known, if not the only effective one. The endorsement of this method of treatment in the preface by Dr. Richard C. Cabot; that it accomplishes the withdrawal of morphine with vastly less suffering than that entailed by any other treatment or method that he had ever seen, shows the lack of experience of a prominent physician in general practice with methods of treatment for a special condition, and should serve as a warning to others against hasty endorsement of man and methods in fields outside of their special study.

A System for Case-Taking, with Explanatory Notes. By GEORGE WILLIAM ROSS, M.A., M.B., Tor.; M.R.C.P., Lond.; and JULIAN LOUDON, B.A., M.B., M.R.C.S., Eng.; L.R.C.P., Lond. Canada: The Macmillan Company.

A brochure of seventy pages, containing a method of case-taking, has been made up by the above authors, and has been accepted for use by the Department of Medicine of the University of Toronto. It consists of nine headings: general registration, complaint, present illness, personal history, family history, initial observation, general examination, interrogation concerning special systems and investigation of special systems. The outline of procedure to be followed under each heading, with definite questions to be answered, is printed on the right-hand pages. On the left-hand pages are printed explanatory notes regarding different points of the examination, elucidating them, and emphasizing wherever necessary. As a comprehensive basis for careful and thorough case-taking, and as a guide for any physical examination, the book can be recommended.

Diagnosis from Ocular Symptoms. By MATTHIAS LANCTON FOSTER, M.D., F.A.C.S., Mem-

ber American Ophthal. Soc., etc. Rebman and Company.

In this book the author takes up leading symptoms and signs, and works from them to the diagnosis, collecting about the predominating feature all the minor ones that make up the picture of the disease. To do this well and to make such a work of value to the ophthalmologist is, as the author says, "a stupendous task," and we think he may well be proud of his success. The book must be read to be appreciated; no summary can show the industry and ability of the author, and we believe few will read without learning a good deal of value for daily practice. The book is printed in large type on mat surfaced but light paper, and its perusal gives pleasure to the eye as well as to the mind.

The Secretion of Urine. By A. R. CUSHNY, M.D., LL.D., F.R.S. New York and London: Longmans, Green and Company.

Hardly any member of the series of monographs on physiology which are gradually appearing under Professor Starling's editing will prove more valuable than this one upon the kidney. Even efforts to get reliable information through textbooks upon this organ are crowned with disappointment and confusion, but only those who have attempted to plunge into kidney literature can realize the mass of contradiction and worthless investigation which surrounds the subject. It is a great achievement, and one which could only have been accomplished by an investigator very prominent in kidney work, to have struggled through this mass of material, adequately separating wheat from chaff, and appending acute critical discussion to practically every phase of the subject.

A summary of the anatomy and histology of the kidney is followed by chapters which carry one through the kidney metabolism, theories of renal secretion, functions of the tubules and glomeruli, mechanical factors in secretion and chemical factors in secretion. Then follow chapters upon diuretics,—the action of which has been so indissolubly bound up with renal physiology, glycosuria, albuminuria, and notes on nephritis, and other renal disorders in their bearing upon the normal physiology of the organ.

If the reader has made no excursions into kidney literature, he will be apprised of the magnitude of Professor Cushny's task by the appended bibliography, which is carefully indexed for the text, and adds markedly to the value of the book. Indeed, one finds acute comment upon almost every one of these many references,—comments which cannot fail to save time and energy for every worker in the field. Well-chosen diagrams and tables illuminate a text which cannot be too highly commended.

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THE CAUSES OF EYESTRAIN.

THE increase in the use of lenses among civilized peoples, because of visual defects or disturbances, has been variously ascribed to poorer visual development among the civilized, as against aboriginal peoples. This hypothesis has not, however, been substantiated by investigations into this matter. The apparently better vision of the aborigines is due to their ability to utilize the other senses and other aids in assisting them to interpret visual perceptions, rather than to any inherent visual superiority. That they are not sufferers from the many reflex effects of the use of the eyes—eyestrain—is because they are not called upon to use their eyes in the same manner or in the same degree that modern civilization and technical development demand. Very few eye defects give any trouble until the eyes are used for close or detailed application of a fatiguing character, or unless the illumination is poor, or badly directed or distributed,—whether natural or arti-

ficial. Even children with high visual defects are not likely to suffer the effects until they attempt the close application required of them at school. And in this respect it is the far-sighted or those with poor general or ocular musculature who suffer first and suffer most. The near-sighted are quite in their element in near work. They have the added advantage of magnification that their near-sighted eyes give them. Even with high degrees of myopia, it is remarkable how little discomfort they suffer and how well they can do work that requires close application. Of course, they suffer the embarrassment, rather than real inconvenience, of being unable to negotiate distant points. Near-sighted people suffer least from eyestrain. But even very mild degrees of hyperopia will often cause profound reflex disturbances, out of all proportion to the degree of the defect. It is for this reason that any case of hyperopia must be detected early and appropriate lenses applied. For high degrees of hyperopia, even correction is not remedial. Vocation must be chosen that close application of the eyes may be at a minimum.

The eyestrain due to muscular fatigue of the ocular muscles is more nearly a condition accompanying civilization than any other condition. Lack of muscular development, sometimes congenital, to be sure, but usually the result of sedentary life or occupation, leaves the ocular muscles underdeveloped and unable to maintain the muscular balance of the eyes or of the accommodative apparatus. Fatigue and all the reflex symptoms that go with it must be the natural result. The muscular cause of eyestrain can be distinctly limited by inculcating the necessity for proper physical exercise and physical development in the child, as well as in the adult. Perhaps the universal military training advocated at present will be the means of removing this one evil of civilized life—lack of muscular development. For eyestrain the result purely of muscular underdevelopment, neither lenses nor muscle treatment locally is of permanent benefit. Treatment must be general, looking toward an increase in the general tone of the body, and particularly of the muscles. Because so many of the neurasthenic symptoms are of reflex ocular origin, it would seem wise in making vocational placements, in the young particularly, to take into consideration the muscular and refractive conditions of the eye, in order that those unfitted for long-

continued near application of the eyes shall not be placed in unsuitable occupations.

But while these causes of eyestrain apply only to individuals with these developmental or muscular conditions, any one may have his eyes put under a strain by such extrinsic conditions as illumination. Numerous investigations into the lighting conditions of work and school-rooms have shown under what poor conditions of illumination most people work. Where the degree of illumination is adequate, the distribution and the protection of the light are still questions for consideration. Inadequate, ill distributed or unprotected illumination places an extra burden upon the visual integrity. Eyes become easily fatigued, reduce their efficiency and cause the many reflex symptoms of eyestrain. Probably the most harmful of the illumination defects is badly protected illumination. Illumination that glares directly into the eyes, without any protection, is most injurious. The source of light must always be protected against glare. It is the object of vision that needs illumination, rather than the eyes themselves. In the matter of the lighting of factories and public buildings of whatever character, the illuminating engineer is as important a factor in construction as the construction engineer. Proper direction, distribution and protection of the sources of light are, besides, matters of economy. Due regard for the location of desks, tables, machinery, etc., with regard to the source of light, will give the best and most economical consumption of light, and will avoid the baneful effects upon the eyes of bad illumination.

ANNUAL REPORT OF THE PHILIPPINE HEALTH SERVICE FOR 1916.

THE Philippine Health Service for 1916 presents a most favorable report. The routine work of the Service was carried on in a satisfactory manner, real interest and enthusiasm being manifested by the various officers and employees. With the exception of cholera, no epidemic diseases were present in serious form. Cholera was present throughout the year, but did not assume serious proportions until May, when, in spite of all efforts to control it, it began to make its appearance in various places. A total of 12,847 cases and 7986 deaths occurred in the Islands during the year. Of this total,

1214 cases and 513 deaths occurred in Manila, and 11,637 cases and 7473 deaths occurred in the various provinces. At the end of the year, Manila was almost entirely free from cholera, and only a few scattered cases existed in the provinces.

Extraordinary efforts were put forth to control the cholera epidemic, but as the situation became serious, all that could be done was to hold the disease down to a minimum and eradicate it as soon as possible. It was quite conclusively proved that the epidemic was spread by cholera carriers, and kept going by them. Record is now being kept of all persons who have recovered from cholera and are known carriers of the disease. These will be examined from time to time, to learn as far in advance as possible of an impending epidemic.

The work of the School of the Bureau of Science, and others, has demonstrated quite conclusively that when a cholera carrier is given a severe purge or when he ingests food or other substances which have the effect of producing a severe purge, the carrier frequently is converted into an actual case. The usual history of the first case of cholera in a community is as follows: No cholera has been present for months, perhaps. An individual, usually one of the very poor class, has gone to work or fishing early in the morning, and has been exposed to the rain and has been thoroughly wet all day; upon his return home, completely exhausted, soaked to the skin, and very hungry, he eats excessively of any food that happens to be in the house, as often as not rice and fish that very probably have been cooked in the morning and kept in a covered vessel all day; that night he has an attack of "cholera morbus," with vomiting and purging, cramps, etc., and the next day has cholera and probably dies; this is the usual focus from which the disease spreads throughout the town. Though not every person who has an experience similar to the above has cholera, it is believed that a large per cent. of the cholera carriers who have such an experience are likely to develop the disease.

At the time of the recent outbreak of cholera in Manila, it was discovered that an unusual quantity of shrimp and other small fish had appeared in the local market. These soon began to decompose, and the sanitary inspectors ordered their condemnation; the fish venders consequently lowered their prices to avoid loss, and large quantities were bought by the poorer class-

es; many fell ill of cholera, and the epidemic raged until the sale of shrimp and shell fish was prohibited. At once the disease abated.

Early in the outbreak it was decided to establish temporary emergency hospitals for cholera, as a means of removing cases of infection to a common center where they could be effectively controlled. There was some objection at first, as the people did not take kindly to hospitalization. After the successful treatment of several cases at Hagonoy, Bulacan, however, a voluntary influx of cases began, and as a result the epidemic was promptly controlled, with an average mortality of about 45%, as compared with 75-80% in previous outbreaks. Emergency hospitals sprang up wherever cholera appeared, with excellent results; the people were convinced, and voluntarily reported themselves or their sick, all over the Islands. In Manila, over 50% of all cases presented themselves.

Two sanitary commissions—all that the Service has been able to support—have made a study of conditions in ten towns of the Islands, and have learned many things concerning the mortality rate. As a direct result of their efforts, the people have learned that many diseases hitherto considered inevitable, are preventable and curable. Sanitary ordinances have been enacted and enforced, especially those regarding sewage and waste disposal. Over fifty women's clubs have been formed, dedicated to the prevention of infant mortality, to better housing for the people, and to the inculcation of better balanced diets. With this end in view, almost 15,000 families agreed to maintain vegetable gardens, with the idea of adding protein-producing vegetables to the almost universal diet, among the poorer classes, of rice and fish.

The researches of the sanitary commissions indicated early in their existence the necessity for a better house than the average Filipino now possesses. The average house now in use is made of nipa and bamboo, affords inadequate shelter from the elements, is too small for the average family, is a continual expense on account of its frail nature, and is perpetually in danger of destruction by fire, due to its tinder-like makeup. The problem has been studied, and the commission now issues a statement that it is possible to build a house that is sufficiently large for the average family, that is neat in appearance, durable, fireproof, and sanitary, for the average cost of about \$250 to \$300 U. S. currency. These houses are to be built of mate-

rials locally available, and on a very simple plan of construction.

Statistics show that there are about 4466 insane in the Islands, and of these, hardly 1000 are under proper restraint and care. The great majority are cases of the manic-depressive type of insanity, probably due to chronic intoxications resulting from chronic infections, as fevers, malaria, etc., and to prolonged and repeated food poisonings, due to improper and poorly balanced diets. When proper care and food are received, many recover.

The leper colony at Culion averages about 4300, and many improvements have been made there of late. The lepers are taking more interest in life than ever before, and the colony does much to care for itself. An ice plant has been constructed with leper capital, all the fish used are caught by the lepers, and almost all the vegetables used are raised by them. Practically the only articles sent to the colony now are clothing and rice; groceries are sent to the Culion store and sold to the lepers at cost.

There were few cases of actual smallpox during the year, but the number of cases of varioloid, practically without deaths, has increased. This is interpreted to mean that the immunity obtained by the general vaccination begun in 1905 and 1906 has begun to wane. Revaccination will be started at once, and it is hoped to establish immunity once more before that formerly gained is entirely lost.

THE SCOPE OF MENTAL HYGIENE.

It is a fallacy to view the subject of mental hygiene as a separate scientific entity distinct from general hygiene. It would, perhaps, be better to look upon mental hygiene as the initial and essential step toward general hygiene. Certainly it is the pivot around which all notions of hygiene must revolve. It is essentially necessary to understand and to carry out the principles of mental hygiene in order to develop the kind of mind that will be receptive to the dictates of general hygienic principles. With the development and the conservation of the mind, whether as a matter of course in evolution or as the result of positive effort in study and research, has come the eradication of diseases previously scourges of mankind, and which, undoubtedly, will be followed by still

further progress in this direction. But whether it is a question of progress in general or in mental hygiene, large results must come from the efforts of the entire community, rather than by individual effort.

The first necessity in mental hygiene, as in general hygiene, is the exclusion of foreign sources of mental disease and the isolation and segregation of those found in a given community. In a measure, even mental disease is "contagious" indirectly from the influence association with mental cases has on immature minds, but perhaps more directly by the tendency to transmit mental disease to the offspring. Moreover, there are certain diseases and conditions, almost entirely preventable, which seem to have a very marked tendency to produce mental disease in the person concerned and then in the offspring by hereditary transmission. In this respect, alcohol and syphilis are, of course, the most important factors. The prevention of alcoholism and syphilis would be the greatest factors in the promotion of mental hygiene and in the conservation of the mind. It is estimated that 70% of the mental conditions are hereditary in nature. This would seem to indicate that, in spite of the enormous number of insane and defective, very few of them are accidental infections, so to say, but are, most of them, due to bad ancestry.

Of those not traceable to heredity, the cause of the mental disturbance can be found in the lack of attention in the very young to such conditions as environment, food, exercise, preventable illness, etc.,—the same conditions, practically, that officiate in the causation of physical conditions. Besides, the impressionistic condition of early life makes it essential that only those ideas be allowed to appear before the child that will arouse healthful thoughts and actions. The depressing, the maudlin and the exciting must be religiously kept from the immature mind. Instead, their places must be taken up by healthful play, exercise, amusement, reading. The mind, as the body, must be carefully guarded from trauma of any kind. The mind must be exercised but not injured. When the child has a bad heredity these elements must receive especial attention in order to anticipate injury, just as a frail child must be more carefully guarded than the normal. Suitable occupation must be determined early, and proper vocational training given in order to prevent economic failure and the depressing effect it has

on the mind. Vocational guidance, based on mental and physical capacity and inclination should be the foundation of the future industrial life of the child. No opportunity must be overlooked to encourage and to educate the younger generation in wholesome interests and wholesome thoughts, and to discourage laziness, dreaming and introspection.

Much of the incidence of mental disease and defect can be reduced by proper education, even when the heredity of the individual is bad; more of it can be prevented by the eradication of preventable diseases and abuses, and much more by segregating and preventing marriage and propagation by defectives and those suffering from alcohol, syphilis, and like conditions, and finally by a more rigid exclusion of alien sources of disease, disease tendency, and inferiority.

INDICATIONS FOR LOCAL ANESTHESIA.

As a general routine of operative clinics when there exists none of the accepted contraindications to general anesthesia, and where the operation is sufficiently major to warrant rendering the patient unconscious, general anesthesia must still remain the most feasible method. But while general anesthesia renders the patient unconscious and free from pain, it does not render the organism free from the shock to the nervous structures engendered directly by reason of the operative hurt to the tissues. The sensibility of the nervous system and its centers controlled, the production of shock is not avoided by rendering the patient unconscious with the general anesthetic. In reality, it is only with local anesthesia that these conditions may be anticipated. The Crile method of anoci-association is the outgrowth of this circumstance. Unless the seat of the operation, where the hurt is administered to the tissues and to the irritable nerves, can be freed from communication with the general nervous system for the period of the operation, shock and the other bad by-effects of the operation will continue in spite of the anesthesia, the anesthetic, or the quality of the anesthesiologist. The injection of the local anesthetic into the site of the surgical hurt renders it impossible for the shock of the operation to be transmitted to the higher centers. When, then, the general anesthetic is administered, there is the advantage of unconsciousness together with the freedom of shock.

Moreover, it is quite well understood that, no matter what general anesthetic is administered, it is highly toxic to the organism. Many of the post-operative complications, such as albuminuria, acidosis, etc., are directly due to the anesthetic. Of course, some anesthetics are better than others. At best, there is only a choice between evils. One anesthetic may be contraindicated in some conditions and under certain circumstances, another in other conditions and circumstances, but all of them have distinct contraindications, often hard to determine. Such mechanical conditions as the presence of mucus, congestions, and such diseases as nephritis, diabetes, sepsis, suppurative thoracic conditions and the like all make the administration of a general anesthetic dangerous. Of course, there are untoward effects and dangers from the use of local anesthesia. Sudden death is not unknown. Yet local anesthesia is becoming more and more popular in major operations, and in operations where local anesthesia would never have been dreamed of only a short time ago. There is hardly any major operation which cannot be performed under local anesthesia. In minor operations there is hardly any excuse for rendering the patient unconscious and subject to all the after-effects, dangers and annoyances of a general anesthetic. Local anesthesia often has the peculiar anomaly that the administration of the local anesthetic is out of proportion in point of time to the operation itself. But this is not a valid objection against it. Local anesthesia will not overcome spasm of the abdominal muscles, nor can local anesthesia be administered in mutilating, violent injuries where rapid surgical measures of an emergency character are indicated. In the latter instance it was always understood that, no matter how much the patient was in collapse from the shock of the injury, the general anesthetic had a therapeutic effect in relieving the shock, in the same way that the methods of anoci-association would anticipate it in surgical operations. However, the added shock to the patient of the remedial surgery would tend to overcome any benefit that the general anesthetic would bring about; but in such cases there is no alternative but to give the general anesthetic and operate, regardless of the question of the anesthetic or the operative shock. Whatever the indications, however, children and very nervous individuals are not good subjects for local anesthesia.

ANNUAL REPORT OF THE BOSTON MEDICAL LIBRARY.

THE Boston Medical Library has issued its forty-second annual report for the year of 1917. Several innovations have been made during the year. It has been voted that books shall not be reserved for a longer period than forty-eight hours; duplicate books and periodicals may be given in exchange to other libraries only for similar material needed by the library. It has been decided to keep the library open only three evenings a week, instead of five, and a further curtailment of service may be necessitated by the shortage of coal.

The Committee on Membership and Elections reported that the Library had gained 4 Fellows and 24 Associates, and had lost by death, resignation, and dropped from the rolls, 20 Fellows and 12 Associates, making a net loss of 4 members. The total membership on January 1, 1918, consisted of one Honorary Member, 11 Life Members, 464 Fellows, and 328 Associates, making a total of 804.

The Librarian states that very few new books and periodicals have been received from Europe since last year. Many of the subscription periodicals have been held up in Rotterdam, and there is some question of their being allowed to leave Holland until after the war. Several large collections of books and periodicals, principally in foreign languages and on subjects in which the library has been deficient, have been purchased in this country the past year; among them are books on the examination of food, beverages, and drugs, toxicology, handwriting of the insane, also some valuable monographs and sets of unusual journals. The large collection of autograph letters and autographs, which had not been looked over or put in order for years, has been arranged in chronological and alphabetical order, so that they are now readily accessible.

WAR RELIEF FUNDS.—On March 15 the totals of the principal New England war relief funds reached the following amounts:—

Halifax Fund	\$805,779.75
Belgian Fund	664,538.57
French Wounded Fund	328,566.94
Armenian-Syrian Fund	288,150.59
Jewish Fund	285,532.53
Italian Fund	151,021.64

MEDICAL NOTES.

AMERICAN POSTURE LEAGUE.—At the annual meeting of the American Posture League, which occurred March 9, closing with a dinner for the Honorary Boards at the Aldine Club, the following officers were elected: Miss Jessie H. Bancroft, president; Captain Frederick R. Green, vice-president; Dr. Henry Ling Taylor, secretary; and Dr. Percy W. Roberts, treasurer.

The reports for the year showed a great activity in relation to war conditions, and a large demand on the resources of the American Posture League, as a national health organization, indicating a quickened public conscience on the subject of health since the physical examination for the draft Army.

The Technical Committees of the League reported completed work for the year on factory and school seats, shoes and other articles of clothing for men, women and children, besides a large educational service.

SIXTH CONFERENCE OF INDUSTRIAL PHYSICIANS AND SURGEONS.—The Department of Labor and Industry will hold its Sixth Conference of Industrial Physicians and Surgeons in the Hall of the House of Representatives at Harrisburg, on April 9, 1918.

The program to be presented is of exceptional interest and timeliness. At the morning session there will be brought up the subject of industrial health hazards arising out of the war emergency.

The afternoon session will be devoted entirely to the subject of workmen's compensation. The question of hernia in its relation to the compensation law will be gone into thoroughly, and the possibility of amendments to the present Pennsylvania Workmen's Compensation Law will be discussed.

Copies of the completed program may be obtained on request from Dr. Francis D. Patterson, Chief, Division of Industrial Hygiene and Engineering, Third and North Streets, Harrisburg, Pa.

THE "QUADERNI D'ANATOMIA."—The *Lancet* makes the following interesting statement about the "Quaderni d'Anatomia," by Leonardo da Vinci:

"The 'Quaderni d'Anatomia,' by Leonardo da Vinci, has had a fate stranger even than that

reserved for his other works. Written early in the sixteenth century, almost 300 years were to come and go before any serious reference was made to it, while another 100 years were to pass before it was published in an adequate or complete form. The interest of the work, which formed the subject of two recent Arris and Gale lectures by Professor William Wright, lies largely in the fact that it provides the spectacle of certainly one of the ablest and most versatile men who have ever lived, attempting the solution of some of the main problems of anatomy and physiology at a period when the systemic circulation, osmosis, oxygen, and the microscope were all unknown. In addition to these grave defects in his knowledge, Leonardo, like all his contemporaries, was further handicapped by the inheritance of two fundamental errors—viz., the belief that the arteries contained free air and that the interventricular septum of the heart was penetrated by narrow passages through which the blood passed from the right ventricle into the left. The nearest approach which Leonardo made to the elimination of the first of these errors was that he in one passage denied that free air entered the heart from the lungs, and wrote of the blood in the lungs being merely refreshed, thus returning to the correct Aristotelian view. Leonardo's main contributions, had the publication of his work not been delayed, would have included a more precise description of the interior of the heart and large vessels than had ever been supplied before, thanks, no doubt, to his skill in draughtsmanship, and a singularly correct account of the action of the thoracic and abdominal muscles in respiration. The book was intended as a textbook for students, and it is of interest to find how modern were his methods, as, for instance, the representation of opaque parts as transparent so that the relations of underlying structures may be observed, the pouring of wax into hollow viscera in order to obtain casts of their interior, the study of comparative anatomy, and in one instance, at least, the practice of vivisection. Although Leonardo's work cannot be said to have had any effect on the progress of anatomy, it must always remain an interesting contribution, while the question as to what its effect might have been can never be finally decided."

THE USE OF HOG SERUM BY VETERINARIANS.—Criticism of the State Department of Animal Industry was voiced at a recent hearing before the Legislative Committee on Agriculture, on a petition of Frank R. Austin of Lynn, that on application of any registered veterinarian, the department shall furnish him at cost with hog serum in such quantities as he may require for his practice. Mr. Austin charged that the State Department has a monopoly on the serum, that it sends its agents to treat diseased hogs, and that there are delays involved which often cause

serious losses to hog owners. Dr. John F. Winchester of Lawrence, Dr. William M. Simpson of Malden, and Dr. C. H. Playdon of Reading all argued that they should be allowed to apply the serum, and that the department ought not to stand in their way.

James E. Dodge, superintendent of the Hood farm in Lowell, led the opposition. He is a breeder of swine, and opposed allowing veterinarians the power to administer serum for hog cholera. Edward A. Cahill, of the Department of Animal Industry, declared the improper use of the serum to be the cause of the loss of hundreds of thousand of dollars among hogs in other States. He said that the average veterinarian was not competent to its use. He stated that out of 500 veterinarians in the State, only four have asked for the right to use the serum, and that not a single hog owner had asked that the right be given to veterinarians.

WAR NOTES.

AN APPEAL FOR ROEHAMPTON HOSPITAL.—Lieutenant-General Sir Francis Lloyd has requested that the following appeal for Roehampton Hospital be given publicity in the columns of the JOURNAL.

"In 1915 we made an appeal for funds to establish Queen Mary's Convalescent Auxiliary Hospitals at Roehampton for Sailors and Soldiers who had lost their limbs in the war. The response from all parts of the Empire was most gratifying, and with liberal grants made by the British Red Cross Society and the National Relief Fund, the Committee were able to establish the Hospitals on a sure foundation, and to extend vastly the original scheme by the erection of additional wards, training workshops, recreation rooms, factories for artificial limbs, etc.

The work at Roehampton is so widely known that it is unnecessary to describe it, but it may be mentioned that up to December 31 last over 11,500 officers and men (including a large number from our Overseas Dominions) have been admitted to the hospitals, supplied with artificial limbs (provided by the State) and taught how to use them; large numbers have also been admitted for readjustment and renewal of their limbs.

Twenty-three hundred men have been found good posts through the Employment Bureau attached to the hospitals, and 7000 men have been returned to their old employment or passed on to local committees with information necessary to secure them a fresh start in life.

The present accommodation is totally inadequate to meet the increasing demands made upon it, and serious consideration must now be given to the future.

The majority of our limbless men are quite young, cheery and full of hope about their future, but much depends upon the usefulness of their artificial limbs, which always require readjustment owing to the shrinking of the stump. Also at intervals repairs and new limbs are necessary. Consequently, there will be need of Roehampton for the next forty years.

Scotland, Ireland, and Wales have recognized this want, and by voluntary effort have established permanent fitting hospitals for dealing with the problem. It is felt that the need here has only to be known, and England will wish to do the same for her gallant men who are maimed for life.

A generous conditional offer has been made by the owner of Roehampton House, Mr. Kenneth Wilson, by which it is hoped that the house and grounds may be purchased and the great work continued there without interruption after the war, but if this is found to be impossible, funds will be available to purchase another suitable place.

We earnestly appeal for £100,000, not only to extend the present scheme but to found a permanent 'Roehampton,' where our men can always return to have their artificial limbs readjusted and renewed, and we feel sure that this appeal to make adequate provision in the future for the limbless men who have served their country by sea, land, and air will not be made in vain. No donation will be too small and none to large.

Cheques and postal orders should be addressed to the Hon. Treasurer, Queen Mary's Auxiliary Hospital, 12, Little College Street, Westminster, S.W., marked 'ROEHAMPTON,' and crossed Lloyds Bank, 222, Strand.

FRANCIS LLOYD,

Lt.-Genl., Chairman,

M. E. GWYNNE HOLFORD,

CHARLES H. KENDERDINE,

Hon. Treasurer,

KATHLEEN FALMOUTH."

EXPLOSIVE ACTION OF BULLETS.—Herman Küttner (*Muench. med. Woch.*, August 14, 1917, abstracted in a recent issue of the *Lancet*), consulting surgeon in the German navy, has drawn attention to the fact that the explosive action of projectiles in the body is not confined to the rifle bullet. This effect of the rifle bullet had in recent wars been the cause of numerous mistakes and false accusations. Küttner recognized that fragments of shells and bombs may inflict a single wound of entry and numerous wounds of exit. He has seen a whole series of such cases, and he believes that they are not rare. He has seen not only single wounds of entry and multiple wounds of exit inflicted by shell fragments, but with the x-rays has demonstrated the pres-

ence of many fragments of shell in the body, though there was only one wound of entry. He reproduces photographs of two metal boxes for holding a gas mask outfit which had been struck by fragments from an aerial bomb. Both boxes show a single hole of entry, while on the opposite side there were many large and small holes of exit. An analysis of the splinters from the bombs revealed no intrinsic explosive qualities, only nickel molybdenic steel.

INVESTIGATION OF TRENCH FEVER BEGUN.—

Sixty enlisted men of the United States Sanitary Corps, all from New England, are now serving as hosts to normal or infected lice, or have received injections of blood from soldiers known to have been suffering from trench fever. The organism producing the fever has not yet been discovered by microscope, and an investigation is under way to discover and control it. Trench fever heads the list of fevers among the British troops, and although it is not fatal, it means an absence of six to eight weeks from the ranks. Scarcity of physicians in the British Army prevented the Royal Army Medical Corps from studying the cause of the disease. The American Red Cross decided to undertake a survey based on the yellow fever investigation in Cuba.

With the approval of General Pershing, a call for volunteers was made, and virtually every member of the 101st, 102d, and 104th Field Hospitals and the 101st, 103d, and 104th Ambulance Companies offered to submit to the experiment. Sixty men were selected, and were quartered in a British base hospital, with a complete laboratory equipment, and everything necessary to trace the transmission of the parasites causing the disease. There the effect of the injections received is being observed.

NEED OF SURGICAL DRESSINGS.—The New England Surgical Dressings Committee, now operating as an auxiliary of the American Red Cross, issues an appeal to the public for \$30,000, to be used within the next three months for the purchase of material to be made into surgical dressings. Although this committee is producing over 1,000,000 dressings a month, the demand is so enormous that it desires not only to continue the present product, but to increase shipments to meet the necessities of armies in the field.

The appeal follows:

"The Surgical Dressings Committee once more asks your help. The public has been most generous in its support, but the great increase

in the number of dressings produced and shipped makes it necessary to ask again for more money.

The committee has made every endeavor to supply more and more dressings, the need for which grows constantly. The number produced has risen from 990,712 sent during the month of August last to 1,314,000 sent during January. Materials cost more than they did six months ago. Obviously this increased production requires more money.

Some of the branches have raised their output beyond their capacity to raise money. The workers are anxious to keep on increasing their product. They should receive from this committee the financial assistance they require to enable them to do so.

The committee has been fortunate in being able to supply the Red Cross with some of the dressings they have from time to time needed. The cost of these does not constitute any part of the increased expenses, for they are paid for by the Red Cross. Neither are they included in the 5,800,000 dressings shipped during the past six months directly to Europe, for the use of the United States Army hospitals and those of our Allies. The need for them is far from being met, even by the large number that has been sent. It is the desire of the committee to stimulate production still further, and to increase the shipments as rapidly as possible. We need at least \$30,000 for the next three months' expenditures, and we appeal for assistance, in the confident belief that the supply of dressings for wounded soldiers will not be allowed to fall short, even though the demands of the war are a heavy burden on every one.

Checks may be made to the order of the Surgical Dressings Committee and sent to the Old Colony Trust Company, 17 Court Street, Boston.

JOHN W. ELLIOTT, M.D.,
MARGARET D. PORTER,
ELIZABETH CABOT LYMAN,
Executive Committee."

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 9, 1918, the number of deaths reported was 299, against 278 last year, with a rate of 19.88, against 18.77 last year. There were 42 deaths under one year of age, against 38 last year.

The number of cases of principal reportable diseases were: diphtheria, 71; scarlet fever, 32; measles, 162; whooping cough, 40; typhoid fever, 1; tuberculosis, 50.

Included in the above were the following cases of non-residents: diphtheria, 11; scarlet fever, 5; measles, 2; whooping cough, 1; tuberculosis, 6.

Total deaths from these diseases were: diphtheria, 6; measles, 5; whooping cough, 4; tuberculosis, 26.

Included in the above were the following non-residents: diphtheria, 5; measles, 3; whooping cough, 4; tuberculosis, 24.

HOSPITAL BEQUESTS.—By the will of the late Mrs. Charlotte M. Fiske of Boston, the Free Hospital for Women at Brookline and the Boston Home for Incurables each receives a bequest of \$5000.

The will of the late George Von L. Meyer, of Hamilton, Mass., contains bequests of \$2500 each to the Boston Lying-in Hospital, the Massachusetts General Hospital, and the Huntington Memorial Hospital, Boston.

DIPHTHERIA DEATH RATE.—Eight out of every 100 persons sick with diphtheria in Massachusetts die. This is by far too high a death rate, and every precaution should be taken to guard against the disease. The early calling of a physician in case of diphtheria, and the prompt administration of diphtheria antitoxin in sufficient amounts will decrease this fatality rate at once. The following methods for prevention of diphtheria are advocated by the State Department of Health of Massachusetts.

1. Isolation of diphtheria carriers and all clinical cases of diphtheria on the appearance of the first symptoms of the disease.
2. Culturing of families, schools, institutions, and other contacts.
3. Immunization of all contacts with diphtheria antitoxin, using 1000 units.
4. Use of the Schick test in families, schools, and institutions.
5. Active immunization with toxin-antitoxin of those individuals who prove to be susceptible to the disease by the Schick test.

Isolation of cases, culturing of contacts and immunization by antitoxin have been carried out for several years. This immunization is fleeting and protects the person for only a few weeks, but is very efficient in checking outbreaks of the disease. The Schick test and active immunization with toxin-antitoxin enables the health officer to locate the persons who are susceptible to the disease, and to immunize these persons with toxin-antitoxin. This immunity in practically 95% of all persons so treated will last for years.

Miscellany.

MALNUTRITION AMONG SCHOOL CHILDREN. RESULT OF A RECENT INVESTIGATION.

THE BUREAU OF CHILD HYGIENE has just completed a survey of 171,691 school children in the public schools of the Borough of Manhattan. This number represents all of the children who were in attendance at school at the time the survey was made. It is, however, far below the registration figures for the borough, owing to the facts that the survey was made during intensely cold weather and many children were kept out of school at that time. It is believed, however, that the survey represents very accurately the general physical condition of the children. Indeed, the fact that these children came to school while other children remained at home would seem to show that they were rather hardier, from a physical standpoint, than the children who were not examined.

This survey was made for the sole purpose of determining the condition of nutrition of these children. The Dunfermline scale was used. No. 1 means a child who is perfectly normal from the nutritional point of view. No. 2 means a child who is in passable condition, that is, one who is not perfectly normal but who does not yet have the stigmata of undernourishment. These are the so-called "borderline cases" and any pronounced change in their living conditions would undoubtedly have a distinct effect upon their physical condition. No. 3 indicates a child who is distinctly undernourished, who bears the stigmata of malnutrition and who needs immediate supervision and readjustment of life and environment. No. 4 represents a child so seriously undernourished as to need immediate medical attention; in fact, a case of pronounced malnutrition or marasmus.

Of the children six years of age, 22.5% were undernourished. This undernourishment increased in percentage up to nine years of age where 25.2% were found undernourished. Then followed a gradual decrease up to the age of 16 years where only 12.1% were found undernourished. The general proportion of actual undernourishment for the borough was 21.6%. Previous surveys made in other boroughs and statistics of undernourishment on record in the department pertaining to the children of these

boroughs show that conditions are just about the same as in the Borough of Manhattan.

It may safely be assumed that the figures found in Manhattan are applicable to the other boroughs. Applying them in this way to the total school registration of about one million children in the public and parochial schools of New York City, it is probable that 17.3%, or 173,000, are in normal condition as regards nutrition, 61.1%, or 611,000, are passable or borderline cases, 18.5% are seriously affected with malnutrition and 3.1% are in a bad stage.

It was not found that nationality played any important part in the consideration of the prevalence of undernourishment, although it is of interest to note that of the Italian children examined, 28.7% were found undernourished. These Italian children comprised 23% of the total number examined. The children from Russia and Poland, who comprised 26% of all the children examined, were found undernourished in 19.8% of the cases. The figures for the other countries have no particular significance, but range generally from 17% to 20%.

It should be distinctly understood that these children indicated as undernourished are not actually starving. According to Dr. S. J. Baker, under whose direction this investigation was made, these children are undernourished as a result of long-continued under-feeding or wrong feeding. She calls attention to the fact that this condition has been increasing in seriousness for the last year and a half and has resulted mainly from the fact that the increase in wages has not kept pace with the decrease in the buying power of the dollar for food. It has been shown that during the past few years wages have increased an average of 18% while the buying power of the dollar for food has decreased about 62% during the same period.

Children are always the first in any community to react to any environmental changes or conditions which pertain to hygiene and food. Investigations have shown that large numbers of children are being fed on tea or coffee or beer or wine with bread; that milk is used sparingly, if at all, and that the proper type of food for children is seldom used. The condition is one that should be met not by charity or philanthropy. It can be met, however, in two ways: First, to help the mothers of the city to understand how they may, within their limited incomes, purchase and prepare proper food for their children, and, second, to make available a

daily meal for all children in the city at a price they can afford to pay. Such a meal could easily be provided through the school lunch system and should be available for all children of school age and pre-school age, not only during the school year, but also during vacations.

CHILDREN FIRST.

"THE results of underfeeding or indiscriminate food substitution in childhood are startlingly shown abroad as a result of the war, and are beginning to be evident in our own great cities"; and "milk has no substitute in the diet of the child." These and other unqualified statements of the importance of guarding the milk supply to prevent the physical deterioration of American children during the war are scattered through the latest report issued by the Children's Bureau of the U. S. Department of Labor and entitled, "Milk, the Indispensable Food for Children."

This report, with its striking figures showing a decrease in the amount of milk now available and in the amount which is finding its way to the children in poor homes, has special interest in connection with the campaign to save 100,000 lives of babies and little children during the second year of the war. It not only emphasizes the fact that children who are deprived of milk cannot thrive properly, but it analyzes the changes in the production and export of dairy products during the war, and shows the necessity of public action.

"The nourishment of our children is the first duty of the nation. Since milk and milk products are a vital necessity for children, for nursing mothers, and for the sick and wounded, the public should be made to realize that the children's need for dairy products should be assured."

England and Italy have regulated the sale of cream and curtailed the use of butter, in order that their child population might receive the more adequate and economical nourishment offered by whole milk. Germany, early in the war, provided that the adult civilian population might have milk only after the needs of children, mothers, invalids, and the army were met.

The report discusses the various forms in which cows' milk may be used for children. For the young baby, it says, there is nothing so good as mother's milk.

"Never before in the history of civilization has it been so urgent a matter that every child should have breast milk for as long a time as possible, in order that every child that survives birth may have the best chance for life and health."

But for children under two, other than those breast fed, and for older children, the report states that cows' milk is an absolute necessity if disease and death are to be kept within bounds, and if the coming generation is to survive and to sustain the national standards. "Children first" should be part of the national food program."

"It is the duty now of every individual community to see that its children have milk of good quality and in sufficient amount to assure their normal development. To do this the price of milk must be controlled or fixed, and the milk supply to infants and children carefully safeguarded. The malnutrition of our children was, even before 1914, a serious national problem and one demanding urgent attention. Poverty and ignorance of dietary essentials have been ever-present factors in the malnutrition of the young, and war conditions cannot fail to increase the gravity of the situation and the difficulties of maintaining the health of the nation."

HYGIENE AND SANITATION IN JERUSALEM.

In the issue of the *Lancet* for February 23, 1918, Dr. E. W. G. Masterman presents a valuable account of Jerusalem from the point of view of health and disease, from which the following abstracts seem of interest:

"Jerusalem lies some 2400 feet above the level of the Mediterranean and 3700 feet above the Dead Sea. The site is largely shut in by higher mountains. The older parts of the city are built upon a vast accumulation of rubbish, the débris of previous cities, in places over 100 feet deep. Modern Jerusalem has in normal times about 80,000 inhabitants, over two-thirds being Jews, most of whom depend largely upon charity. During the last thirty years there has been a rapid growth of suburbs to the north, northwest, and west.

As Jerusalem is inhabited by representatives of all the nations of Christendom, is visited annually by thousands of tourists and pilgrims from all parts, and is a 'Sacred' City in the eyes of Christians, Jews and Moslems, its sanitary condition cannot continue a matter of indifference, as it has been to a large extent under the Turkish Government. Almost all efforts made

to improve the condition of the city have come from outside sources, and many radical improvements which different European bodies would gladly have undertaken as to water-supply, drainage, etc., have been persistently thwarted by the Turkish authorities.

As to climate, the mean temperature for the four summer months (June to September) is in Jerusalem 74° F. (in the maritime plains 80°, and on the banks of the Jordan 92.5°). The mean maximum temperature in these summer months is 84.3°; a temperature of over 100° in the shade is very exceptional. The temperature is largely mitigated by dryness of atmosphere and by a cool breeze. During the rainy months of winter (December to March) the mean temperature is 53.6° (in the plains 57.1° and on the Jordan 71.2°). Frost is not uncommon, and snow some years lies for several days—sometimes to a considerable depth.

The rainfall in Jerusalem has now been carefully watched for over half a century. Like all this part of the Near East there is a wet winter season and a very dry summer season, each of about four months' duration. The mean rainfall is now about 26.5 inches; maximum, 42.95 inches, 1877-78; minimum, 12.5 in 1869-70. The most disagreeable and unhealthy days occur during May and from the middle of September to the end of October, when the dry southeast wind—the *sirocco*—blows sometimes for several successive days hot and stifling from over the deserts.

The water-supply of Jerusalem has ever been a problem. The ancient spring known as the 'Virgin's Spring,' or to the Arabs '*Ain Umm ed Deraj*' (lit. the Spring of the Mother of the Steps), and known in the Old Testament as Gihon, originally, no doubt, gave a fresh and plentiful supply. But though it is now at times fairly plentiful—but intermittent—the quality is bad. The other source, *Bir Eyyub*, is a deep well with a perennial supply at the bottom of equally sewage-tainted water. In Roman times—possibly originally a little earlier—great aqueducts were made to bring water to the city, but the most that reaches the city now is a four-inch iron pipe, and at two points the poor are at stated hours allowed a meager supply. This is the only really fresh water available, but the whole site of the city is riddled with cisterns of many kinds. All houses have private cisterns and they are a satisfactory source of supply if kept in good repair, cleaned periodically, and if no water is allowed to run into them except from a well-cleaned roof. But these provisos are often neglected. There has in the past been no sort of inspection or control over these cisterns, all of which need to be most rigidly supervised and provided with pumps. Various schemes have been made in recent years to provide the city with a better water-supply. I think it is a question whether it would not be more practical to enclose a great catchment area on higher ground west of the city and collect the rain-

water in cisterns for conveyance to the city by pipes.

The drainage of Jerusalem also requires immediate attention. The existing sewers are old and utterly useless. Needless to say, nearly all the w.c.'s in the city are untrapped—the native w.c. being an open slit between flagstones, flushed only at rare intervals; it is not surprising that flies abound all the summer, and the older city is one of various and unpleasant odours. In some of the hospitals and schools a system of cesspools has been adopted.

Under the Turks no system of notification of infectious diseases was inaugurated, and amid many hospitals no efficient accommodation of cases needing isolation was provided. The only disease which seems to have been taken seriously in the Turkish Empire is cholera, and most elaborate, but fantastic and ridiculous, precautions are taken from time to time to exclude this disease. It must be admitted that on several occasions when cholera has raged in other districts, it failed to reach Jerusalem. Vaccination is not enforced and smallpox epidemics in this city are terrible in the extreme. Notification of deaths has never been carried out seriously. Recently certificates of death from medical men were asked for by the burial authorities, but the whole thing was an utter farce and, therefore, was rightly dropped.

It must not be thought that all this want of health organization was taken lightly by the medical men of the city. The difficulty has been the supineness of the Turks, the jealousy of all the various nationalities and their unwillingness to work together, and the want of close union and coöperation on the part of the medical men. The first really hopeful movement in a right direction was made shortly before the war, when, through the efforts of Professor Mühlens, a German professor of tropical diseases sent out by a Berlin committee, a kind of 'International Health Bureau' was with infinite difficulty established. Professor Mühlens was genuinely anxious to get the coöperation of other nationalities, and particularly of England. Locally, I had the privilege of representing the British and American consuls on the international committee, and was endeavoring almost up to the outbreak of hostilities to get a whole-time British scientific medical man sent out from England to coöperate in the laboratory work. The war has swept all this away, but while it was there great improvements were made. A pathological laboratory was started, where any medical men in the city could have blood examinations and tests made, e.g., Widal, Wassermann, cultures, films of malaria, etc.; tumors were examined, etc.; serums were prepared. There was a small Pasteur Institute for rabies. This was only the beginning of what it was hoped would be done. By means of lectures and publications in English, French, German, and Arabic, a knowledge of the true nature of malaria and its mode of

spread was being diffused, and an attempt to purify the cisterns was begun.

All this now waits for England to reorganize. It is a great work which is certain, if carried out, to have enormous results for good in the city and the land. Jerusalem is a city of hospitals, but half of them could be emptied if an efficient department of public health would organize these needed reforms. Although it may be necessary to have some form of international health committee, the executive should be British and free from any form of partisanship."

The most prevalent disease in Jerusalem is malaria. Two factors of importance bear particularly upon this question.

"The first is the great number of mosquitoes, among which *Anopheles maculipennis* is plentiful. The second is the nearness of the tropical Jordan valley, where tropical malaria is endemic, provides a source of constant reinfection. There is no reason whatever to doubt that with proper organization this pest could be reduced to very small dimensions.

Blackwater fever is not uncommon in other parts of Palestine, but I have known several fatal cases originate in Jerusalem itself.

Of other tropical diseases it is only necessary to make brief mention here. Dengue fever occurs in rather frequent epidemics. Recurrent fever due to spirochetæ is found occasionally. There are many sufferers from tropical boil in Jerusalem—most of these come from Aleppo and its neighborhood and from Bagdad, and I have never seen one originate in the mountain districts of Palestine. There is a local variety of the disease known as Jericho boil, which occurs in the Jordan Valley, which I have described elsewhere. I excised some of these, and the pathologist who investigated them considered that it was a distinct disease. This is very doubtful.

Jerusalem is one of the four centers in the Holy Land where lepers congregate. The majority, happily, are segregated in the Moravian Leper Hospital.

Among diseases of the eye, the commonest is ophthalmia. The onset of the annual exacerbation of ophthalmia is usually just after the occurrence of the highest mean temperature. Infection is due to flies and to the use of common mattresses or the use of dirty rags, etc., for wiping the eyes. Cataract occurs much as in England, but the cases stand operations much better, iritis being a rare disease in Jerusalem. 'In Palestine not 10% of the population have absolutely sound eyes' (Butler).

By far the oldest establishment is the English Mission Hospital, founded in 1842 and transferred to handsome new buildings a mile outside the old city walls in 1897. The new hospital was erected on plans made by Professor Beresford Pite. It is built on the pavilion system, and has two wards for men, two for women, and two for children. There are also some private wards for English tourists; its present

number of beds could be doubled without altering the original plan. It had before the war accommodation for 70 beds and cots, with a staff of two English doctors, six English nursing sisters, and native assistant nurses and servants. It has in the past been used exclusively for Jews (Kosher food being the rule) except as regards the private patients, but since the war broke out it became—until our capture of Jerusalem—a 'Red Crescent Hospital,' and I hear that at one time no less than 200 typhus cases were accommodated there. It is now temporarily a Divisional headquarters, but may shortly be reopened as a general hospital for all classes, and, it is to be hoped, will continue to be so used.

The German Hospital, under the Kaiserwerth Deaconesses Committee, was originally an outgrowth of the English Hospital. It, too, was at first within the old wall, but now has fine buildings near the latter. It accommodates a little over 100 beds, and is a good surgical center. Then there are besides a Turkish Municipal Hospital, and French, Russian, Greek, Armenian, and Italian Hospitals—the last a very handsome building still in process of construction when the war broke out. There was also a small hospital, started in rented premises, in connection with the English bishop and supported largely from Canada.

The Jews have four general hospitals, one of which, known as Shaaret Zedek, is the largest and finest hospital in the city. There are a hospital for lepers supported by the Moravian community, and two eye hospitals. One of these is Jewish, the other is the British Ophthalmic Hospital, one of the most appreciated institutions in Jerusalem. It is supported by the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England. It has two surgeons and a competent staff, and is of immense benefit, not only to the residents of Jerusalem of all classes, but also draws patients from every part of Palestine. It occupies picturesque buildings on the western side of the valley of Hinnom between the railway station and the Jaffa Gate. Between 30,000 and 40,000 out-patients and 1200 in-patients are treated annually. News comes to hand that the Turks used it as an ammunition store, and blew a great part of it up when they had so hastily to evacuate the city."

MORE NURSES NEEDED FOR WAR SERVICE.

The importance of an intensive training in nursing for young women in the large colleges of the country was emphasized at a meeting recently held at the State House, under the auspices of the Massachusetts Public Safety Committee. The conference was called to consider methods of increasing the number of nurses

available for war service in Europe and America. Several hundred persons attended the meeting, representing the faculties and student bodies of leading New England educational institutions and nurses' associations.

Miss Julia Lathrop, chief of the Children's Bureau, Department of Labor, Washington, told of a twelve weeks' summer course which Vassar College would give to its regular students and others qualified in the elementary principles of nursing. She explained that after the student had completed the course she could then enter a hospital and become a graduate nurse after two years' additional training. By such a method, a large number of nurses would be developed who could relieve nurses now in hospitals for war duty in France, and be of material assistance to the country when the war is ended.

Miss Anne H. Strong, professor at Simmons College, spoke upon public health nursing. There is now an inadequate number of women trained for this purpose. Miss Strong made the statement that, while there are 6500 women capable of donning nurses' gowns in the United States, there are in the city of Berlin alone 6500 women similarly qualified. The District Nursing Association of Boston is giving a course to girls which already has resulted in the securing of more than 80 young women competent to perform the service required in this line. A number of young women have already registered for the intensive training course at Vassar.

VENTILATION AFTER FUMIGATION.

THE spread of the bubonic plague to all parts of the world in recent years has turned attention to the necessity of improved means for the destruction of rats on board ships, as it is through these animals that the disease is transmitted. As rats are great travelers, and as they are to be found in all parts of vessels, and so infect all parts, it is necessary that every part of the ship be fumigated to prevent the spread of the disease.

The fumigants now most used for this purpose are sulphur dioxide and hydrocyanic acid gas. The objections to sulphur dioxide are that it takes a great length of time for the fumes to dissipate, often as much as 16-24 hours, and that it sometimes causes great damage. Hydro-

cyanic acid gas is much more efficient, for it quickly destroys animal life, does no damage to inanimate objects, and smaller quantities are needed. It takes a much shorter time to ventilate a ship after hydrocyanic acid gas than after sulphur dioxide, usually only 2-3 hours being required, but the exact time cannot be determined, owing to changing weather conditions.

As it is important that quarantine officers and steamship agents should know when persons may safely return on board, a system of artificial ventilation is a distinct saving of time. Experiments have been tried along these lines, and it has been found that the best system of artificial ventilation consists of a huge gasoline-driven air propeller, designed to propel boats and sleds. This delivers about 22,700 cubic feet of air per minute, is operated in a horizontal position, and drives air directly downward into the fumigated section of the ship. For holds deeper than thirty feet, a muslin chute is used to propel the air in the proper direction. A hold may be made safe when all hatches have been opened and the aerotruster operated for 30 minutes. A vessel with several holds is usually safe after three hours.

It should be understood that artificial ventilation does not take the place of natural ventilation, and on a warm, dry day, with a good breeze, natural ventilation may save time. But in cloudy or humid weather, artificial ventilation undoubtedly saves much time for all parties concerned.

APPLICATION OF OZONE TO THE PURIFICATION OF SWIMMING POOLS.

RECIRCULATION and disinfection of swimming pool water may now be accepted as standard and mutually interdependent procedures in the sanitary control of plunge baths. Experimental data collected during the past few years have demonstrated beyond doubt the necessity of resorting to refiltration to aid in swimming pool purification, unless fresh, warm, well-filtered water is constantly supplied to the pool. In the latter process the waste of water, and of coal for heating it, coupled with the difficulty of removing all suspended matter by an initial filtration, are sufficient reasons for adopting refiltration of the pool water as a standard procedure. A clear water is essential, not mainly because of

esthetic reasons, but for the reduction of the hazard of drowning.

The methods of disinfection hitherto employed are objectionable on one score or another. Ultraviolet light in actual practice has proved ineffective; copper sulphate in low dilutions is unreliable, and in high concentration is not only costly, but produces a water disagreeable to swim in; chlorine compounds, while effective as disinfectants, require a technical control usually not available in swimming pools, and when used in excess produce objectionable taste and odors in the water.

Ozone is now believed to be the best agent for the purification of swimming pool water. When one part of ozone per million parts of water is used, the result obtained is sterile water. When half part ozone per million parts of water is used, a bacterial reduction of 99.8% results, except when too great an excess of air is introduced with the ozone.

A study of the cost of operation of the ozonator has shown that a current consumption of 2 kilowatts per day with alternating current, and of 4 kilowatts per day with direct current, plus one cent a day for calcium chloride, represents the total operating cost for a 60,000 gallon pool. This amounts to 11 to 15 cents a day for alternating current (at 5 to 7 cents per kilowatt), and to 21 to 29 cents a day with direct current. The cost of refilling the pool is at least \$30. The use of the ozonator decreases the number of times the pool must be emptied to such an extent that the cost of the installation is soon paid for.

The application of ozone to the purification of swimming pools is automatic in control, reliable in action, and inexpensive in application. No other chemical can be used to such great advantage in this connection.

Correspondence.

BACTERIOLOGY OF CEREBROSPINAL MENINGITIS.

Welsh Metropolitan War Hospital,
Cardiff, Wales, Feb. 11, 1918.

Mr. Editor:—

I notice from your editorial of Jan. 17, 1918, on "The Military Significance of Cerebrospinal Meningitis" that the new knowledge of the bacteriology of this disease has not yet come to your attention.

When on duty in London in September, 1917, I learned that studies conducted this side of the water have clearly demonstrated that the meningococcus is not an individual organism but is a group of at least

four, as we also now know the pneumococcus to be. These can readily be distinguished by certain precipitation or agglutination tests.

The method of treatment now is to identify the type of organism and to treat the case with a polyvalent (all four types) serum strongly fortified with the individual type of meningococcus.

Carriers are detected by culturing the nasopharynx in large groups of men. The plate method of growing the germs is used. Military units with not more than six per cent. of carriers have little trouble with meningitis, but when, as is frequently found, the rate runs from 20% to 40% or more, trouble can be predicted. The carrier rate is then cut down by inhalations of vaporized flavine followed later by zinc sulphate, also vaporized.

This is the method that the British and (I believe) other armies are now employing to keep down the incidence of cerebrospinal meningitis in training camps. The work is relatively simple as new medical officers are trained for the work in but one week.

Yours truly,

WM. D. REID, *Lieut., M.O.R.C.*

VENEREAL DRUG LEGISLATION.

Boston, March 9, 1918.

Mr. Editor:—

Re—proposed legislation "relative to the prescribing and compounding of certain drugs."

Is it not true that the existing laws of this Commonwealth state that none but a registered physician shall prescribe or recommend *any* drugs or medicines for the cure or alleviation of *any* disease? Such being true, is it not a fact that "counter prescribing and advice" and back room attention—in other words, the treatment of diseases, or the practice of medicine—are prevalent in the majority of the drug stores in this state? Still further, is it not true that the quack medicine and nostrum manufacturers depend upon such drug stores (and certain newspapers and department stores) to disseminate their fraudulent and worthless products? Ergo, why not enforce the existing laws as they are written? Would not such enforcement cover the ground?

Yours very truly,

JAMES BROWN THORNTON, M.D.

SOCIETY NOTICES.

NEW ENGLAND PHYSICAL THERAPEUTIC ASSOCIATION.

—The next regular meeting of the New England Physical Therapeutic Association will be held at the Hotel Brunswick, Boston, Tuesday, March 26, at 8 P.M. Dinner will be served at 6 P.M. Dr. Percy G. Stiles, of Harvard Medical School, will read a paper on the Autonomic Nervous System.

A cordial invitation is extended to all members of the medical profession to be present.

FRANK E. STOWELL, M.D., *President*,
FREDERICK H. MORSE, M.D., *Secretary*,
FRANK B. GRANGER, M.D., *Treasurer*.

BOSTON MEDICAL LIBRARY in conjunction with the SUFFOLK DISTRICT MEDICAL SOCIETY.—Medical Section meeting, John Ware Hall, Wednesday, March 20, 1918, at 8.15 P.M.

"Social and Health Conditions among the Civilian

Population of France." Dr. James Alexander Miller.

Dr. Miller was a member of the commission sent last summer to France by the Rockefeller Foundation to undertake anti-tuberculosis work.

Light refreshments after the meeting.

EDWIN A. LOCKE, M.D., *Chairman*,
GEORGE R. MINOT, M.D., *Secretary*.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—A special meeting of the Society will be held at the Boston Medical Library on Friday, March 22, 1918, at 12 o'clock noon.

Business: Report and recommendations of the Committee on the question of financial assistance of those who enlist.

Consideration of the question of omitting the annual dinner this year.

Paper: John Rapst Blake, Chairman of the Massachusetts State Committee for National Defense, will speak on the Medical Aspects of the War.

Lunch will be served at 1.15 P.M.

LYMAN S. HAPGOOD, *Secretary*.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at the Roxbury Masonic Temple, 171 Warren Street, March 26, at 8.00 P.M. sharp. Phone Roxbury 22753.

Communication: "The Management of Syphilis in the British Army." G. W. Winchester, M.D., Central Military Hospital, Lichfield, England.

Discussion, F. P. McCarthy, M.D.

The Censors meet for the examination of candidates, Thursday, May 2, 1918. Annual Meeting, Wednesday, May 15, 1918.

BRADFORD KENT, M.D., *Secretary*.

EAST BOSTON MEDICAL SOCIETY.—Dr. W. P. Graves will speak before the East Boston Medical Society Friday, March 22, at 8.30 P.M., at Walcott Hall, Central Square.

Subject: "Ovarian Organotherapy."

Physicians interested in this subject are invited to be present.

J. DANFORTH TAYLOR, M.D., *Secretary*.

RECENT DEATHS.

DR. CLARENCE L. HOWES, one of the most prominent medical practitioners in Plymouth County, died recently at his home at Hanover Four Corners, after a short illness. He was born at Mattapoisett, March 28, 1848, the son of Dr. Woodbridge Howes. The family removed to Hanover in 1864, and young Howes attended Hanover Academy, where he fitted for Amherst College from which he graduated in 1869. After a period of school teaching he entered Massachusetts Institute of Technology and graduated in 1873 as a civil engineer. He followed this profession until 1876 when he began the study of medicine. He graduated from the Long Island College Hospital in 1878, and then returned to Hanover where he soon built up a practice which extended to all parts of Plymouth County. He was a member of the Hanover school committee for 33 consecutive years, was prominent in town and county affairs and a writer on contemporaneous matters. He is survived by a daughter, Caroline.

DR. CHARLES F. OSMAN of Dorchester, died recently at his home. He was born in New York, July 27, 1858, but his father, also a physician, removed to Boston when the son was but a boy, and his school years were passed here. He was graduated from Harvard and also from the Harvard Medical School in the Class of 1880, and had since practised in Dorchester.

Dr. Osman was a member of various medical societies. He is survived by his widow and one daughter.